METHOD OF GAMING AND A GAMING MACHINE WITH DOUBLE HIGH SYMBOLS

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ABSTRACT
An example game controller includes a symbol generator to provide a plurality of symbols based on one or more random numbers generated by a random number generator. The plurality of symbols have varying sizes and include a first symbol occupying one symbol position and a second symbol occupying multiple symbol positions. The second symbol includes a plurality of portions, each portion corresponding to one of the multiple symbol positions occupied by the second symbol. A comparator is to determine one or more game outcomes in the plurality of symbols, each of the plurality of portions of the second symbol is evaluated individually to determine whether a winning combination has been formed with the first symbol and a portion of the second symbol. Each of the plurality of portions of the second symbol corresponds to a different award.
FIG. 5

To local area or wide area network(s)
FIG. 7
FIG. 10A: Mixed Symbol Reel Strip

1021

FIG. 10B: Reel Window

1002
1022
1042

FIG. 10C: Bottom of SYM A, BLANK, Top of SYM D are on the Pay Line

1003
1047
1050
1013
1012

FIG. 10A: Mixed Symbol Reel Strip

1021

FIG. 10B: Reel Window

1002
1022
1042

FIG. 10C: Bottom of SYM A, BLANK, Top of SYM D are on the Pay Line

1003
1047
1050
1013
1012
SAME WAY SEVENS

2, 3, & 4 CREDITS WAGERED ACTIVATES BONUS FOR THE FOLLOWING DOUBLE HEIGHT SYMBOLS.

These symbols will land on a payline with an orientation that may pay a BONUS award depending on credits played.

1110 1115

FOR EXAMPLE: 1120 1130

1135

SAME WAY in the ABOVE direction.
All double height symbols must be ON AND ABOVE the payline.
3 or 4 credits wagered or standard pay with 1 credit wagered.

SAME WAY in the BELOW direction.
All double height symbols must be ON the payline.
ON AND BELOW the payline.
23 or 4 credits wagered or standard pay with 1 credit wagered.

SAME WAY in the MIXED direction.
All double height symbols must be ON the payline with a mix. ABOVE AND BELOW the payline.

Fig. 11
FIG. 12

Symbol Library

RNG

Comparator

Symbol Generator

Display Output

1200 → 1206 → 1202 → 1208

1204

1210
FIG. 13

1300 Initiate a game.

1310

Determine presence of multiple position symbols.

1320

Compare at least a portion of the generated symbols to determine game outcome(s).

1330

Display symbols and associated outcome(s).

1340

Award a prize.

1350
FIG. 14

PROCESSOR 1412

I/O DEVICE 1426

MEMORY CONTROLLER 1420

I/O CONTROLLER 1422

SYSTEM MEMORY 1424

MASS STORAGE MEMORY 1425

NETWORK INTERFACE 1430

I/O NETWORK DEVICE 1432

CONTROLLER MEMORY 1428

CONTROLLER I/O NETWORK DEVICE 1430

I/O 1426 DEVICE 1422 I/O 1418 1432 CONTROLLER MEMORY 1424
METHOD OF GAMING AND A GAMING MACHINE WITH DOUBLE HIGH SYMBOLS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of priority to U.S. Provisional Patent Application No. 61/261,160, filed on Nov. 13, 2009, entitled “A METHOD OF GAMING AND A GAMING MACHINE WITH DOUBLE HIGH SYMBOLS”, which is herein incorporated by reference in its entirety.

FIELD

[0002] The present invention relates to a gaming system, a method of gaming, a game controller, and a computer readable medium storing executable computer program code.

BACKGROUND

[0003] In the casino industry, gaming machines, such as slot machines, fruit machines, or poker machines, have in recent years become one of the more popular, exciting, and sophisticated wagering activities available at casinos and other gambling locations. At the same time, gaming machines have also become a source of greater revenue for gaming establishments.

[0004] Gaming machines with rotating reels have been popular for many years. Initially, the rotating reels were mechanical spinning reels housed inside the machine which were spun and randomly stopped to place images on the reels in alignment to determine payouts. Drive mechanisms for the reels have developed substantially overtime to the point where the rotation and, in particular, the stopped position of the reels is precisely controlled, and in turn, manages the allocation of payouts. More recently, electronic gaming machines have been used to simulate spinning reels using computer generated graphics and electronics. However notwithstanding the existence of electronic gaming machines, players are still attracted to, and enjoy, gaming machines having mechanical reels.

[0005] A gaming system such as a video slot machine can include symbols displayed as a plurality of virtual reels on a video display. Each reel comprises a plurality of symbols arranged in a predetermined sequence. Typically, when a reel stops, a plurality of symbols each reel are visible on the display. For example, three symbols of each reel. While the stopping position of the reel can be chosen in a number of different ways, in all cases, the symbols which stop in the display are adjoining symbols in the symbol sequence. Typically, when spinning of the reels is simulated, symbols before the stopped symbols in the symbol sequence will be visible at least as the reel comes to a stop.

SUMMARY

[0006] Certain examples provide methods, systems, and apparatus for gaming and gaming controllers.

[0007] Certain examples provide a gaming controller including a symbol generator to provide a plurality of symbols based on one or more random numbers generated by a random number generator. The plurality of symbols have varying sizes and include a first symbol occupying one symbol position and a second symbol occupying multiple symbol positions. The second symbol includes a plurality of portions, each portion corresponding to one of the multiple symbol positions occupied by the second symbol. A comparator is to determine one or more game outcomes in the plurality of symbols. Each of the plurality of portions of the second symbol is evaluated individually to determine whether a winning combination has been formed with the first symbol and a portion of the second symbol. Each of the plurality of portions of the second symbol corresponds to a different award amount. A display output is to output the plurality of symbols and an indication of the one or more game outcomes to a gaming display for viewing.

[0008] Certain examples provide a method of gaming implemented on a gaming machine. The method includes providing a plurality of symbols based on one or more random numbers. The plurality of symbols includes a first symbol occupying one symbol position and a second symbol occupying multiple symbol positions. The second symbol includes a plurality of segments, each segment corresponding to one of the multiple symbol positions occupied by the second symbol. The method includes determining, using a processor, one or more game outcomes based on the plurality of symbols. Each of the plurality of portions of the second symbol is evaluated individually to determine whether a winning combination has been formed with the first symbol and a segment of the second symbol. Each of the plurality of portions of the second symbol corresponds to a different award. The method includes outputting the plurality of symbols and an indication of the one or more game outcomes to a gaming display for viewing.

[0009] Certain examples provide an article of manufacture including a computer readable storage medium and executable program instructions embodied in the computer readable storage medium that when executed by a programmable system cause the system to perform functions that implement a gaming controller. The implemented gaming controller includes a symbol generator to provide a plurality of symbols based on one or more random numbers generated by a random number generator. The plurality of symbols include a first symbol occupying one symbol position and a second symbol occupying multiple symbol positions. The second symbol includes a plurality of portions, each portion corresponding to one of the multiple symbol positions occupied by the second symbol. A comparator is to determine one or more game outcomes in the plurality of symbols, wherein each of the plurality of portions of the second symbol is evaluated individually to determine whether a winning combination has been formed with the first symbol and a portion of the second symbol. Each of the plurality of portions of the second symbol corresponds to a different award amount. A display output is to output the plurality of symbols and an indication of the one or more game outcomes to a gaming display for viewing.

[0010] Certain examples provide a gaming system including a player interface comprising a display for viewing by a player and a gaming controller. The game controller is arranged to provide a symbol generator to provide a plurality of symbols based on one or more random numbers generated by a random number generator. The plurality of symbols includes a first symbol occupying one symbol position and a second symbol occupying multiple symbol positions. The second symbol includes a plurality of portions, each portion corresponding to one of the multiple symbol positions occupied by the second symbol. The game controller is also arranged to provide a comparator determining one or more game outcomes in the plurality of symbols. Each of the plurality of portions of the second symbol is evaluated individu-
ally to determine whether a winning combination has been formed with the first symbol and a portion of the second symbol. Each of the plurality of portions of the second symbol corresponds to a different award amount. The game controller is arranged to provide a display output outputting the plurality of symbols and an indication of the one or more game outcomes to a gaming display for viewing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a block diagram of the core components of a gaming system.
[0012] FIG. 2 is a perspective view of a gaming machine.
[0013] FIG. 3 is a block diagram of the functional components of a gaming machine.
[0014] FIG. 4 is a block diagram representing the structure of a memory.
[0015] FIG. 5 is a diagram schematic of a networked gaming system.
[0016] FIG. 6 is a further block diagram of the gaming system.
[0017] FIG. 7 depicts an example electromechanical stepper gaming machine.
[0018] FIG. 8 shows a logical representation of a gaming system.
[0019] FIGS. 9A-9C provide several example reel strips used in gaming machines.
[0020] FIGS. 10A-10C provide several example reel strips used in gaming machines.
[0021] FIG. 11 depicts a pays screen from the Aristocrat Same Way Sevens™ game.
[0022] FIG. 12 illustrates a block diagram for an example gaming system providing extended height symbols in one or more symbol positions.
[0023] FIG. 13 depicts a flow diagram for an example method for generating multiple position symbols for game play.
[0024] FIG. 14 is a block diagram of an example processor system that can be used to implement systems, apparatus, and methods described herein.
[0025] The foregoing summary, as well as the following detailed description of certain embodiments of the present invention, will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, certain embodiments are shown in the drawings. It should be understood, however, that the present invention is not limited to the arrangements and instrumentality shown in the attached drawings.

DETAILED DESCRIPTION

[0026] Although the following discloses example methods, systems, articles of manufacture, and apparatus including, among other components, software executed on hardware, it should be noted that such methods and apparatus are merely illustrative and should not be considered as limiting. For example, it is contemplated that any or all of these hardware and software components could be embodied exclusively in hardware, exclusively in software, exclusively in firmware, or in any combination of hardware, software, and/or firmware. Accordingly, while the following describes example methods, systems, articles of manufacture, and apparatus, the examples provided are not the only way to implement such methods, systems, articles of manufacture, and apparatus.

[0027] When any of the appended claims are read to cover a purely software and/or firmware implementation, at least one of the elements in an at least one example is hereby expressly defined to include a tangible medium such as a memory, DVD, CD, etc. storing the software and/or firmware.

[0028] Certain examples are described in detail with reference to gaming machine and/or other display devices incorporating rotating reels. However, it will be appreciated that the display devices and gaming machines described can incorporate many other features in addition to those mentioned in the following description including, for example, video display units, spinning wheels and any other interactive medium which may or may not be played in combination with a game being played on the rotating reels. Although not shown in the drawings, in some examples, the reels are driven by a stepper motor that allows the reels to be moved through a series of incremental positions and, in particular, known stop positions. Operation of the stepper motor is control using one or more suitable computer processors that determine the sequence and position of the images in the reels when in the stop position and, therefore, outcomes of a game.

[0029] In some examples, a slot machine and/or other similar gaming device is provided in which some symbols are larger than other symbols. For example, some symbols can be twice the height of other symbols on the same and/or different reel (e.g., electromechanical reel, video reel, etc.). The larger symbols can align a top portion (e.g., a top half) or a bottom portion (e.g., a bottom half) of the symbol on a pay line and/or other pay pattern rather than being centered with other symbols on a pay line, for example. Symbol portions (e.g., symbol halves, thirds, quarters, etc.) can be treated separately on a pay table, for example.

[0030] Traditional reel symbols on many gaming (e.g., slot) machines are short symbols having no blanks between them. Each symbol is mapped one-to-one with reel stops. Other reel symbols alternate between taller symbols and blanks, with the center of each symbol and blank mapped on the reels stops. In some instances, a tall symbol can be mixed with shorter symbols, but the tall symbol is centered on the reel stop as are the short symbols and blanks (if any).

[0031] In some examples, a mix of short and tall symbols is provided with blanks between them. However, the tall symbols are mapped onto two reel stops each rather than being centered on a reel stop like other symbols and blanks. While this example uses short symbols, blanks, and tall symbols, a game can be implemented having all tall symbols, with or without blanks, or with only one tall symbol, for example. In some examples, a symbol can be three, four, and/or another multiple as high as a normal symbol occupying one reel/symbol position. A symbol can occupy an entire reel strip, for example. Such tall symbols can be implemented on a set of electromechanical reels and/or symbol positions having one, two, three, four, five, and/or more reels/columns of symbols of various lengths, for example.

[0032] The bottom half of a symbol may not necessarily pay the same as the top half of the symbol. For example, a pay can be based on aligning three top-half symbols, while another pay can be based on aligning three bottom-half symbols. A third pay can be a mixture of the previous two examples. A bonus feature can be implemented to allow one or more reels to be held with one type of symbol while the other reel(s) re-spin to try to get a combination of three similar symbols.
In a first form, a stand alone gaming machine is provided wherein all or most components to implement a game are present in a player operable gaming machine.

In a second form, a distributed architecture is provided wherein some of the components to implement a game are present in a player operable gaming machine and some of the components to implement the game are located remotely relative to the gaming machine. For example, a “thick client” architecture may be used wherein part of the game is executed on a player operable gaming machine and part of the game is executed remotely, such as by a gaming server; or a “thin client” architecture may be used wherein most of the game is executed remotely such as by a gaming server and a player operable gaming machine is used only to display and/or receive gaming information to the player and receive gaming inputs from the player.

However, it will be understood that other arrangements are envisioned. For example, an architecture may be provided wherein a gaming machine is networked with a gaming server and the remote functions of the gaming machine and the gaming server are selectively modifiable. For example, the gaming system may operate in stand alone gaming machine mode, “thick client” mode, or “thin client” mode depending on the game being played, operating conditions, etc. Other variations will be apparent to persons skilled in the art.

A gaming system may be any electronic gaming machine (EGM) such as a slot machine, fruit machine, video Poker machine, Keno or Bingo machine, or any other electronic gaming device or terminal including a handheld electronic device or an electromechanical stepper machine. A gaming system may also include a live table game such as Blackjack, Pai Gow, or Baccarat, a multi-terminal gaming machine such as multi-terminal roulette, Sิก Bo, Poker, dice games, and other games that may be interfaced with a player tracking module and slot accounting system. As an example, a gaming table layout may be embodied as a video display. Thus, a gaming system, as used herein, includes gaming tables as well, and is not limited to any specific kind of gaming device.

A gaming system could also be implemented in a personal digital assistant, cell phone, mobile gaming, or any other gaming environment where gaming takes place using electronic devices, e.g., casino gaming, or for novelty gaming using promotional or valueless credits. Further, where games are connected to or interact with a large screen display, the features may be applied to the individual gaming machines or the large display.

A gaming system can provide primary or main game(s) and secondary or bonus/feature games to a player. Games can be provided via preconfigured storage at the gaming system, via download from an external source, and/or via server-based execution, for example. Games can be provided in response to certain player and/or casino actions, including but not limited to player tracking rewards, game play, casino promotions, tournament play, etc. Gaming systems can provide player and/or game play data to a management system and/or external monitor for player tracking, auditing, slot accounting, regulatory/licensing compliance, and/or other, for example.

Irrespective of the form, the gaming system includes several core components. At the broadest level, the core components are a player interface 50 and a game controller 60 as illustrated in FIG. 1. The player interface 50 is arranged to enable manual interaction between a player and the gaming system and for this purpose includes the input/output components for the player to enter instructions and play the game.

Components of the player interface 50 may vary from embodiment to embodiment but will typically include a credit mechanism 52 to enable a player to input credits and receive payouts, one or more displays 54, a game play mechanism 56 that enables a player to input game play instructions, and a speaker 58.

The game controller 60 is in data communication with the player interface and typically includes a processor 62 that processes the game play instructions in accordance with game play rules and outputs game play outcomes to the display(s) 54. Typically, the game play instructions are stored as program code in a memory 64 but can also be hardwired. Herein the term “processor” is used to refer generically to any device that can process game play instructions in accordance with game play rules and may include: a microprocessor, microcontroller, programmable logic device or other computational device, a general purpose computer (e.g., personal computer) or a server.

A gaming system in the form of a stand alone gaming machine 10 is illustrated in FIG. 2. The gaming machine 10 includes a console 12 having a video display 14 on which is displayed representations of a game 16 that can be played by a player. A mid-trim 20 of the gaming machine 10 houses a bank of buttons 22 for enabling a player to interact with the gaming machine, in particular during game play. The mid-trim 20 also houses a credit input mechanism 24 which in this example includes a coin input chute 24A and a bill/voucher acceptor 24B. Other credit input mechanisms may also be employed, for example, a card reader for reading a smart card, debit card or credit card. A player tracking module may be provided having a reading device for the purpose of reading a player tracking device, for example part of a loyalty program. The player tracking device may be in the form of a card with a machine readable element such as a magnetic stripe, flash drive, and/or any other portable storage medium capable of being read by the reading device, for example.

A top box 26 may carry artwork 28, including, for example, pay tables and details of bonus awards and other information and/or images relating to the game. Further artwork and/or information may be provided on a front panel 29 of the console 12. A coin tray 30 is mounted beneath the front panel 29 for dispensing cash payouts from the gaming machine 10.

The display 14 shown in FIG. 2 is in the form of a video display unit, particularly a cathode ray tube (CRT) screen device. Alternatively, the display 14 may be a liquid crystal display (LCD), plasma screen, any other suitable video display unit. The top box 26 may also include a display, for example, a video display unit, which may be of the same type as the display 14, or of a different type.

The display 14 may include a game display area and a surrounding border or background, for example. Where a transmissive display is used, the transmissive display may overlay all or part of the game display area on the display 14. Video displays (e.g., LCD, CRT, plasma, etc.) and/or other illuminating or light sources (e.g., lamps, light emitting diodes (LEDs), etc.) may also be integrated with spinning reels to illuminate or animate desired display locations such as pay lines, pay combinations, winning lines, winning combinations, special symbols, etc.
Lighting may also be used to backlight symbols and/or generating a flickering or flashing effect as the electromechanical reels spin, for example. In certain embodiments, one or more light sources may be used with one or more filters to adjust certain characteristics of light emitted by the one or more light sources (e.g., altering lamp light to simulate natural daylight), for example.

FIG. 3 shows a block diagram of operative components of a typical gaming machine which may be the same as or different to the gaming machine of FIG. 2. The gaming machine 100 includes a game controller 101 having a processor 102. Instructions and data to control operation of the processor 102 are stored in a memory 103, which is in data communication with the processor 102. Typically, the gaming machine 100 will include both volatile and non-volatile memory and more than one of each type of memory, with such memories being collectively represented by the memory 103.

The gaming machine has hardware meters 104 for purposes including ensuring regulatory compliance and monitoring player credit, and an input/output (I/O) interface 105 for communicating with peripheral devices of the gaming machine 100. The input/output interface 105 and/or the peripheral devices may be intelligent devices with their own memory for storing associated instructions and data and for use with the input/output interface or the peripheral devices. A random number generator module 113 generates random numbers for use by the processor 102. Persons skilled in the art will appreciate that the reference to random numbers includes pseudo-random numbers.

In the example shown in FIG. 3, a player interface 120 includes peripheral devices that communicate with the game controller 101 including one or more displays 106, a touch screen and/or buttons 107, a card and/or ticket reader 108, a printer 109, a bill acceptor and/or coin input mechanism 110 and a coin output mechanism 111. Additional hardware may be included as part of the gaming machine 100, or hardware may be omitted depending on the specific implementation.

In addition, the gaming machine 100 may include a communications interface, for example a network card 112. The network card may, for example, send status information, accounting information or other information to a central controller, server or database and receive data or commands from the central controller, server or database. The network card may facilitate secure communications with the central controller, server or database. The network card may facilitate secure communications with the central controller, server or database.

FIG. 4 shows a block diagram of the main components of an exemplary memory 103. The memory 103 includes RAM 103A, EPROM 103B and a mass storage device 103C. The RAM 103A typically temporarily holds program files for execution by the processor 102 and related data. The EPROM 103B may be a boot ROM device and/or may contain some system or game related code. The mass storage device 103C is typically used to store game programs, the integrity of which may be verified and/or authenticated by the processor 102 using protected code from the EPROM 103B or elsewhere.

It is also possible for the operative components of the gaming machine 100 to be distributed, such as, for example, providing input/output devices 106, 107, 108, 109, 110, 111 remotely from the game controller 101.

FIG. 5 shows a gaming system 200 in accordance with an alternative embodiment. The gaming system 200 includes a network 201, which for example may be an Ethernet network. Gaming machines 202, shown arranged in three banks 203 of two gaming machines 202 in FIG. 5, are connected to the network 201. The gaming machines 202 provide a player operable interface and may be the same as the gaming machines 10100 shown in FIGS. 2 and 3, or may have simplified functionality depending on the requirements for implementing game play. While banks 203 of two gaming machines are illustrated in FIG. 5, banks of one, three or more gaming machines are also envisioned.

One or more displays 204 may also be connected to the network 201. The displays 204 may, for example, be associated with one or more banks 203 of gaming machines. The displays 204 may be used to display representations associated with game play on the gaming machines 202, and/or used to display other representations, for example, promotional or informational material.

In a thick client embodiment, game server 205 implements part of the game played by a player using a gaming machine 202 and the gaming machine 202 implements part of the game. With this embodiment, as both the game server 205 and the gaming machine 202 implement part of the game, they collectively provide a game controller. A database management server 206 may manage storage of game programs and associated data for downloading or access by the gaming machines 202 in a database 206A. Typically, if the gaming system enables players to participate in a Jackpot game, a Jackpot server 207 will be provided to carry out the accounting in respect of the Jackpot game. A loyalty program server 212 may also be provided.

In a thin client embodiment, game server 205 implements most or all of the game played by a player using a gaming machine 202 and the gaming machine 202 essentially provides only the player interface. With this embodiment, the game server 205 provides the game controller. The gaming machine will receive player instructions, pass these to the game server which will process them and return game play outcomes to the gaming machine for display. In a thin client embodiment, the gaming machines could be computer terminals, e.g., PCs running software that provides a player interface operable using standard computer input and output components.

Servers are also typically provided to assist in the administration of the gaming network 200, including for example a gaming floor management server 208, and a licensing server 209 to monitor the use of licenses relating to particular games. An administration terminal 210 is provided to allow an administrator to run the network 201 and the devices connected to the network.

The gaming network 200 may communicate with other gaming systems, other local networks, for example a corporate network, and/or a wide area network such as the Internet, for example through a firewall 211.

Persons skilled in the art will appreciate that in accordance with known techniques, functionality at the server side of the network may be distributed over a plurality of different computers. For example, elements may be run as a single “engine” on one server or a separate server may be provided. For example, the game server 205 could run a random generator engine. Alternatively, a separate random number generator server could be provided. Further, persons skilled in the art will appreciate that a plurality of games servers could be provided to run different games or a single game server may run a plurality of different games based on the terminals.

Persons skilled in the art will also appreciate that the method of the embodiment could be embodied in program
code. The program code could be supplied in a number of ways, for example on a computer readable medium, such as a disc or a memory (for example, that could replace part of memory 103) or as a data signal (for example, by downloading it from a server).

[0061] Some examples provide a spinning reel type game. Spinning reel type games typically allow a player to select how many pay lines of a plurality of pay lines they will play in each game—i.e. a minimum of one pay line up to the maximum number of pay lines allowed by the game. Persons, skilled in the art, will appreciate that in other examples, the player may select a number of reels to play. In most games, each pay line is formed by a set of symbol positions consisting of one symbol position from each reel. That is, a symbol position within the display which corresponds to a reel is assigned to a selected pay line. The symbol positions that constitute each of the pay lines are usually advertised to the player by markings on the display or diagrams showing the symbol positions that correspond to each offered pay line. Some of the pay lines will be horizontal or diagonal lines but others may be other combinations of symbols. Typically, the pay lines will be constituted by symbol positions in the visible window. A game outcome is determined based on the symbols on each wagered upon, e.g. bought, pay line and a prize table that specifies awards. Many modern games have five reels and three symbols of each reel are displayed when the reels stop defining a 5x3 matrix of displayed symbols. It should be understood that based upon the layout of the game reels “symbol” can include graphic representations such as cherries, 7s or other graphic designs or may include “blanks” which are the absence of graphical designs on the reel. The number of reels and a number of symbols or reel stops on each reel may vary (e.g., three reels, four reels, six reels, four symbols per reel, five symbols per reel, etc.) defining different matrices.

[0062] In some implementations, the game controllers of such gaming machines select symbols by employing a stop determining function that randomly determines the stop position for each reel. For example, if there are five reels, each having twenty symbols, the stop determining function might determine that the stop positions are positions: 3, 13, 7, 9 and 17 for reels one through five. The spinning of the reels is then controlled so that each symbol designated by the stop position comes to a stop in the same row, typically a predetermined row in a “window” visible to the player on the display that corresponds to a player playing a single win line—e.g. the middle horizontal row. The other symbols that are visible in the display will be adjacent symbols in the symbol sequence—e.g. if the determined stop position is 3, then the symbols allocated to positions 2 and 4 (above and below the stop position 3) will also be visible if three symbols of each reel are displayed.

[0063] The game controller 60 of the embodiment is shown in more detail in FIG. 6. It will be apparent that the processor 62 implements a number of modules, for example random number generator module 621 by executing software routines. Persons skilled in the art will appreciate that not all modules need be implemented by processor 62. For example, the random number generator module 621 could be implemented by a separate circuit or by a random number generator server.

[0064] Referring to FIG. 6, in the embodiment, the symbol selector 622 is arranged to select a plurality of symbols for each reel independently of the symbol order S1 to Sn specified in the reel data of each reel, reel 1 to reel N 641a, 641b, 641n. For example, each reel defines a physical reel strip (for electromechanical reels) and a virtual reel strip for video reels having symbols laid out, in order, S1 to Sn. The symbol selector 622 sends data which indicates the order in which the symbols of each reel were selected to the display controller 624. The display controller 624 controls display of spinning and stopping of the symbols of each reel. Accordingly, it includes a symbol holder function 624w which is arranged to control the display 54f for spinning and stopping of the symbols.

[0065] One example implementation includes five reels and three display positions for each reel as indicated by a 3x5 matrix of display positions. Accordingly, in an example where a reel contains symbols from S1 to S50, i.e. S1 is the first symbol position, S50 is the last and any other symbol in between such as S15 represents the 15th position in that reel strip. This reel is to spin within a reel column size displaying three symbols, one for each row.

[0066] With reference to the embodiment shown in FIG. 7, the gaming machine 720 includes a set of five rotating reels 721 each having an outer peripheral wall 722 in the form of a strip on which images 723 are displayed. The images 723 may be printed symbols and/or animations. Either separately or in combination with printed or projected images, it is also possible for the outer wall 722 to include a video screen, or windows in which one or more video screens are in registration when the reels 721 are located in a stop position. The video screens can be used to display desired images as determined by a computer processor.

[0067] The gaming machine also includes a structural assembly 724 in the form of a front face including upper and lower panels 725, 726 located above and below the rotating reels 721 and side panels 727 located to the left and right sides of the rotating reels 721. As can be seen in FIG. 7, each of the five rotating reels 721 protrude beyond the panels 725 to 727 defining the front face of the gaming machine 720 and are mounted co-axially and have equal diameters. Although not shown in the figures, the outer walls 722 of the reels 721 can also include light sources including multi-colored light emitting diodes. Operation of the light sources can be controlled so as to project light in any sequence including sequences in association with spinning of the reels being started, stopped, during continuous spinning of the reels and on allocation of a payout being determined.

[0068] To operate a gaming system, a provision is made for a player to enter a wager (money wager, wager of accumulated credits, etc.) and select symbol arrangements (pay lines or reels) upon which to wager and for prompting the gaming system to generate and display an outcome at a content display. If the outcome on any wagered upon arrangement is a winning outcome, the player is awarded credits, coins, tokens, vouchers, etc. If the outcome is a losing outcome the player receives no award. A winning outcome may be embodied as one, two or more symbols in the display (i.e. scatter awards) or may be embodied as predetermined combinations of symbols appearing in a wagered upon, e.g. bought up, symbol arrangement such as on an enabled (wagered upon) pay line.

[0069] The outcome may be determined, for example, by the combination of symbols which appear in the display matrix. Each of the displayed five spinning reels displays a plurality of symbols, and when stopped presents one or more symbols in the display. The symbols displayed may be asso-
associated with pay lines and/or may represent “scatter” wins (a predetermined number of symbols displayed anywhere in the game display), for example. Five symbols may appear along each horizontal “line” or row of the display. For example, the middle row may be the row wagered upon and upon which the outcome is determined. The top row and the bottom row also have symbols and form two other pay line combinations of five symbols, which may be used to determine wins. Thus, a three-by-five matrix defining an array symbols appears as the content display.

[0070] Traditionally, pay lines are established for horizontal rows in the display matrix. However, modern games with up to fifty pay lines have been disclosed in U.S. Pat. No. 5,580,053 issued Dec. 3, 1996, to Crouch.

[0071] Game symbols are selected and displayed from a predetermined universe of symbols as set by the game designer. These symbols can be symbols which are common to numerous games as well as symbols which are unique to the individual game and reflect the overall theme of the game. As such, the symbols can have various shapes and colors or combinations of colors. For example, a symbol may be a brown horse with a red saddle, a bald eagle having the colors of white and grey, a human figure having flesh tones and blue clothing and so forth. Thus each symbol has a shape and a color (or multi-color) characteristic. In the display of a game outcome (or partial outcome) with a 5x3 matrix, there would be a display of fifteen symbols, some of which may appear only once in the display and some which may appear multiple times in the display.

[0072] In a multi-reel, video slot machine there may be more than twenty different symbols in the universe of game symbols. These symbols or symbol combinations are randomly selected such as using an approved random number generator (RNG) for display on the five reels.

[0073] FIG. 8 shows a logical representation of a gaming system 810 arranged to implement a probabilistic game of the type wherein several symbols from a set of symbols are randomly displayed and a game outcome is determined on the basis of the displayed symbols. With some such probabilistic games, the set of symbols include standard symbols at least one of which is a function symbol, and the game outcome is determined on the basis of the displayed standard symbols and the function associated with any displayed function symbol. For example, standard symbols may resemble fruit such as apples, pears and bananas with a win outcome being determined when a predetermined number of the same fruit appear on display in the same line, scattered, and so on. The function associated with a function symbol may be for example a wild function wherein display of the function symbol is treated during consideration of the game outcome as any of the standard symbols. A function symbol may be represented as the word “WILD”, a star, or by any other suitable word or symbol. Other functions are also envisaged such as scatter functions, multiplier functions, repeat win functions, jackpot functions and feature commencement functions.

[0074] The gaming system 810 operates such that one or more function symbols can effectively be added during a game so as to modify the probability of occurrence of a win outcome and thereby enhance player interest in playing the game. This is achieved by selecting one or more symbols to acquire a new function and determining game outcomes based on displayed symbols and the new function. The function acquired by a symbol may be in place of or in addition to any function already associated with the symbol.

[0075] Referring to FIG. 8, the gaming system 810 comprises a memory 812 arranged to store symbol data 814 indicative of a plurality of symbols for subsequent display to a player, function data 816 indicative of one or more functions allocatable to the symbols, and game instruction data 818 indicative of game instructions usable by the gaming machine 810 to control operation of the game.

[0076] The gaming system 810 also includes a symbol selector 820 which is arranged to select several symbols for display to a player and in some game circumstances to select one or more symbols to which a function is to be allocated. In this example, the selection carried out by the symbol selector 820 is made using a random number generator 822.

[0077] It will be appreciated that the random number generator 822 can be of a type which is arranged to generate pseudo random numbers based on a seed number, and that in this specification the term “random” will be understood accordingly to mean truly random or pseudo random.

[0078] The gaming system 810 also comprises a function selector 824 arranged to select one or more functions for allocation to one or more symbols selected during the special game circumstances, and a function allocator 826 arranged to allocate the or each function selected by the function selector 824 to one or more symbols selected during the special game circumstances. The function selector 824 can be arranged to randomly select a function, or to select a function on the basis of a predefined rule.

[0079] The gaming system 810 also comprises an outcome generator 828 which in accordance with the game instructions 818 determines game outcomes based on the symbols selected for display to a player by the symbol selector 820, and on the basis of the function(s) allocated to one or more selected symbols, if any.

[0080] In the examples described below, the symbol selector 820, the function selector 824, the function allocator 826, and the outcome generator 828 are at least partly implemented using a processor or microprocessor, although it will be understood that other implementations are envisioned.

[0081] The gaming system 810 can take a number of different forms, as described above.

[0082] Persons skilled in the art will appreciate that in some examples the player may operate a touch screen and/or buttons 107 (see, e.g., FIG. 3) to facilitate game play, for example.

[0083] In certain examples, mechanical reel slot machines are limited in that the physical reel strips have a certain number of symbol stops on each reel, such as twenty to twenty-two reel stops. One game design limitation of a physical reel strip is that combinations of multiple simultaneous pays can only have a few permutations compared to long virtual video strips with many more symbol positions available. By putting symbols of varying sizes occupying one or more reel stops, multiple pays on different lines can occur, thus increasing the potential volatility of the game, for example. In certain examples, mechanical reel strips, as well as virtual video reels, can be equipped with multi-symbol reel stops.

[0084] Certain examples can provide multiple pays to a player with different portions or segments of an extended reel symbol. Multiple pays can include multiple standard line pays, multiple Reel Power™ pays, etc. Multiple symbols and multiple pays can be applied in a base game, such as a slot
machine, video poker, and/or other base game, a bonus game, and/or other feature of a gaming device, for example. The gaming device can include an electromechanical stepper, video slot/poker machine, transmissive/transparent reel device, etc.

[0085] FIGS. 9A-9C provide several example reel strips used in gaming machines. FIG. 9A illustrates an example reel strip 901 including a plurality of reel stops 911. The reel strip 901 includes both blanks 921 and symbols 931 corresponding to the reel stops 911. FIG. 9B shows an example reel window 902 including three reels with uniform blanks 922 and symbols 932 arranged on the reels. FIG. 9C depicts an example reel window 903 including three reels with blanks 923 and symbols 933 arranged on the reels. As shown in FIG. 9C, blanks 923 and symbols 933 in the middle of the reel window 903 align along a pay line 950 based on the center of the symbol 933 or the blank 923.

[0086] FIGS. 10A-10C provide several example reel strips used in gaming machines. FIG. 10A illustrates an example mixed symbol reel strip 1001 including a plurality of reel stops 1011. The reel strip 1001 includes blanks 1021 and symbols 1031, 1041 arranged along the reel stops 1011. The symbols 1031, 1041 of the reel strip 1001 include small symbols 1031 and large symbols 1041. The small symbols 1031 occupy one reel stop 1011, and the large symbols 1041 occupy more than one (e.g., two) reel stops 1011. For example, symbol one in reel 1001 occupies reel stops two and three, but symbol two occupies only reel stop five.

[0087] FIG. 10B shows an example reel window 1002 including three reels with a plurality of blanks 1022, small symbols 1032, and large symbols 1042 arranged along reel stops 1012 of the three reels. As discussed above with respect to FIG. 10A, the large symbols 1042 of FIG. 10B each occupy a plurality (e.g., two) of reel stops 1012 on a reel while the small symbols 1032 each occupy a single reel stop 1012 on a reel. As shown in FIG. 10C, a pay line 1050 can extend across a small symbol 1033 as well as a portion 1045, 1047 of a large symbol 1043. For example, as shown in the example reel window 1003 of FIG. 10C, the pay line 1050 extends through a lower portion 1045 of a first large symbol 1043, through the center of the small symbol 1033, and through an upper portion 1047 of a second large symbol 1043.

[0088] As illustrated in FIG. 10C, in some examples, a gaming machine and/or other similar gaming device is provided in which some symbols are larger (e.g., extend over multiple reel stops or symbol positions) than other symbols. For example, some symbols can be twice the height of other symbols on the same and/or different reel (e.g., electromechanical reel, video reel, etc.). The larger symbols can align a top portion (e.g., a top half) or a bottom portion (e.g., a bottom half) of the symbol on a pay line and/or other pay pattern rather than being centered with other symbols on a pay line, for example. Symbol portions (e.g., symbol halves, thirds, quarters, etc.) can be treated separately on a pay table, for example.

[0089] In some examples, a mix of short and tall symbols is provided. In some examples, blanks or spaces can be provided between the symbols. The tall symbols can be mapped onto multiple reel stops each rather than being centered on one reel stop. While this example uses short symbols, blanks, and tall symbols, a game can be implemented having all tall symbols, with or without blanks, or with only one tall symbol, for example. In some examples, a symbol can be three, four, and/or another multiple as high as a normal symbol occupying one reel/symbol position. A symbol can occupy an entire reel strip, for example. Such tall symbols can be implemented on a set of electromechanical reels and/or symbol positions having one, two, three, four, five, and/or more reels/columns of symbols of various lengths, for example.

[0090] FIG. 11 depicts a pays screen from the Aristocrat Same Way Sevens™ game which utilizes four double height symbols including three different colored Sevens and a Cherry. There are also two single-height symbols—Bar and Wild Bar. In the game, features become available with an increasing amount bet. One coin buys all symbols on a pay line with no direction bonus. Two coins buys all symbols on the pay line with a bonus for having all symbols in the up direction above the pay line (e.g., the double height symbols positioned on and above the pay line). Three coins bet buys all symbols on the pay line with a bonus for having all symbols in the up or down directions (e.g., all symbols on and above or all symbols on and below the pay line). Four coins wagered activates the free spin bonus. In the free spin bonus, when any two double height Sevens are on the pay line in an up or down (Same Way) orientation, the blocking reel automatically re-spins one time and can create a Same Way or other winner. Any pays from the original spin are paid prior to the re-spin. Any winner from the re-spin is paid. The three Sevens in the same direction do not re-spin.

[0091] As illustrated, for example, in FIG. 11, the bottom half of a symbol may not necessarily pay the same as the top half of the symbol. For example, a pay can be based on aligning three top-half symbols, while another pay can be based on aligning three bottom-half symbols. A third pay can be a mixture of the previous two examples. A bonus feature can be implemented to allow one or more reels to be held with one type of symbol while the other reel(s) re-spin to try to get a combination of three similar symbols.

[0092] FIG. 11, for example, shows an implementation using different pays for different segments of the same symbol. FIG. 11 illustrates an example with double height symbols activated in a bonus based on credits wagered. As shown in block 1110, a pay line 1115 extending through a lower portion of the double height Seven symbols such that the double height Seven symbols are on and above the pay line 1115 pays a bonus award. In block 1120, a pay line 1125 extends through an upper portion of the double height Seven symbols such that the double height Seven symbols are on and below the pay line 1125 and results in a bonus award. In block 1130, a pay line 1135 extends through a lower portion of two of the three double height Seven symbols and through an upper portion of the middle of the three double height Seven symbols. The mixed direction arrangement of double height symbols on the pay line 1135 pays a different (e.g., mixed) award.

[0093] In an electromechanical reel example, both extended and normal size symbols are laid out reel strips based on locations of ribs on the reel drums. An extended can be treated as two or more different symbols (e.g., a top symbol and a bottom symbol) placed adjacent on a reel strip (or across multiple reel strips). Such positioning can also apply to video reels. In some examples, symbols can appear as simulated spinning and stopping reels on a video or other graphical display, for example. Symbols can be represented on electromechanical spinning reels (e.g., stepper reels) with or without a graphical overlay, for example.

[0094] FIG. 12 illustrates a block diagram for an example gaming system 1200 providing multiple symbols simulta-
neously in one or more symbol positions. The system includes a random number generator (RNG), a symbol generator, a symbol library, a comparator, and a display output. The components of the system can be implemented in hardware, software, and/or firmware separately and/or in various combinations, for example.

[0095] The RNG generates one or more symbols for display in a pattern or matrix (e.g., a 3x5 or 4x4 matrix) using the symbol library. Symbols from the symbol library can be assigned a number and/or range of numbers for each symbol position. In certain examples, the symbol library includes single element symbols and multiple element symbols for selection based on RNG output. In certain examples, the symbol library includes single element symbols for selection based on RNG output.

[0096] In certain examples, the symbol generator determines whether a symbol will span one or more symbol positions. If the symbol generator determines that a symbol should occupy multiple positions, multiple consecutive symbol positions are occupied by the selected symbol from the symbol library.

[0097] The comparator examines the symbols provided from the symbol library and compares the symbols to a paytable, rules, etc. to determine an outcome. The outcome may depend upon game parameters and/or rules, for example (e.g., base game, feature game, tournament mode, etc.). In certain examples, if a multiple position symbol is found at a symbol position, the comparator evaluates the portion of the symbol present at the particular position to determine player outcome.

[0098] The comparator result helps to form the display output, which utilizes a graphic display driver to cause symbols to be displayed on a screen, such as a primary or secondary display on a gaming machine. Symbols can be moved in sequence downwardly in the reels, for example, to provide an appearance of spinning reels which are then stopped. The display output can be provided on, for example, electromechanical reels, an overlay over electromechanical reels, a video display simulating reels, a video display providing a matrix of symbol positions such as a 3x5, 5x5, 4x4, etc. matrix of symbols. In certain embodiments, a player can employ an interface device such as a handle, button(s), and/or a touch screen, to initiate game play, stop reel spins, and/or otherwise interact with the displayed game. A player can use the interface device, for example, to select win lines or pay lines in the display game.

[0099] In operation, for example, the symbol generator provides a plurality of symbols based on one or more random numbers generated by a random number generator. The plurality of symbols can have varying sizes, such as a first symbol occupying one symbol position and a second symbol occupying multiple symbol positions. The extended or multiple position symbol includes a plurality of portions, and each portion corresponds to one of the multiple symbol positions occupied by the second symbol.

[0100] The comparator determines one or more game outcomes in the plurality of symbols. The comparator evaluates each of the plurality of portions of the second symbol individually to determine whether a winning combination has been formed with the plurality of symbols. In certain examples, each of the plurality of portions of the second symbol corresponds to a different award amount. The display output outputs the plurality of symbols and an indication of the one or more game outcomes to a gaming display for viewing.

[0101] Such game execution can be implemented using video reels (graphically generated), electromechanical reels, and/or a combination of graphically and electromechanical elements, for example. The game can be implemented on a set of reels, such as a button press, a touch screen push, a handle pull, etc. A wager can be required to initiate game play, for example.

[0102] FIG. 13 depicts a flow diagram for an example method of generating symbols and determining outcomes for game play. At block 1310, a game is initiated. The game can be a spinning reel game occurring on a 5x5 video matrix and/or set of electromechanical stepper reels, for example. The game can be initiated by a triggering event, such as a button press, a touch screen push, a handle pull, etc. A wager can be required to initiate game play, for example.

[0103] At 1320, presence of extended or multiple position symbols is determined. In some examples, multiple element symbols are selected the same as single element symbols using a random number generator and/or other outcome determination method and/or device to determine values for one or more symbols to be displayed. In other examples, the presence of extended height (e.g., double height, triple height, etc.) symbols is determined (e.g., randomly and/or influenced by other game events), and then symbols are selected from a symbol library based on random number generation. In some examples, a random number outcome can be used to determine how many reel positions are occupied by an extended height symbol (e.g., two, three, etc.).

[0104] At 1330, the generated symbols are compared to one or more rules to determine game outcome(s). For example, selected symbol(s) in the player's combination are compared to a paytable and/or other set of rules/symbol patterns to determine whether a prize is to be awarded, such as one or more free games, credits, bonus games, features, promotions, etc. In certain examples, different portions of an extended height/multiple position symbol are examined individually to identify winning symbol combinations.

[0105] At 1340, the symbols and associated outcome(s) are displayed. For example, the matrix or pattern of symbols, including single position and/or multiple position symbols, is displayed via a liquid crystal display on an electronic gaming machine. As another example, generated symbols and outcome(s) can be provided on electromechanical reels with or without transparent and/or translucent overlay.

[0106] At 1350, a prize is awarded, if applicable, to the player. That is, if one or more of the outcomes provide a winning combination to the player, a prize is awarded to the player. The prize can include money, credit, a voucher, food, transportation, lodging, entertainment, a bonus game, etc. The prize can be in conjunction with another base game and/or bonus prize, for example.
One or more components of the method 1300 may be implemented alone or in combination in hardware, firmware, and/or as a set of instructions in software, for example. Certain examples may be provided as a set of instructions residing on a computer-readable medium, such as a memory, hard disk, DVD, or CD, for execution on a general purpose computer or other processing device.

Certain examples may omit one or more of these components and/or perform the components in a different order than the order listed. For example, some components may not be performed in certain examples. As a further example, certain components may be performed in a different temporal order, including simultaneously, than listed above.

FIG. 14 is a block diagram of an example processor system 1410 that can be used to implement systems, apparatus, and methods described herein. As shown in FIG. 14, the processor system 1410 includes a processor 1412 that is coupled to an interconnection bus 1414. The processor 1412 can be any suitable processor, processing unit, or microprocessor, for example. Although not shown in FIG. 14, the system 1410 can be a multi-processor system and, thus, can include one or more additional processors that are identical or similar to the processor 1412 and that are communicatively coupled to the interconnection bus 1414.

The processor 1412 of FIG. 14 is coupled to a chip set 1418, which includes a memory controller 1420 and an input/output (“I/O”) controller 1422. The chip set 1418 provides I/O and memory management functions as well as a plurality of general purpose and/or special purpose registers, timers, etc., that are accessible or used by one or more processors coupled to the chip set 1418. The memory controller 1420 performs functions that enable the processor 1412 (or processors if there are multiple processors) to access a system memory 1424 and a mass storage memory 1425.

The system memory 1424 may include any desired type of volatile and/or non-volatile memory such as, for example, static random access memory (SRAM), dynamic random access memory (DRAM), flash memory, read-only memory (ROM), etc. The mass storage memory 1425 may include any desired type of mass storage device including hard disk drives, optical drives, tape storage devices, etc.

The I/O controller 1422 performs functions that enable the processor 1412 to communicate with peripheral input/output (“I/O”) devices 1426 and 1428 and a network interface 1430 via an I/O bus 1432. The I/O devices 1426 and 1428 may be any desired type of I/O device such as, for example, a keyboard, a video display or monitor, a mouse, etc. The network interface 1430 may be, for example, an Ethernet device, an asynchronous transfer mode (“ATM”) device, an 802.11 device, a DSL modem, a cable modem, a cellular modem, etc. that enables the processor system 1410 to communicate with another processor system.

While the memory controller 1420 and the I/O controller 1422 are depicted in FIG. 14 as separate blocks within the chip set 1418, the functions performed by these blocks may be integrated within a single semiconductor circuit or may be implemented using two or more separate integrated circuits.

Other variations would be apparent to persons skilled in the art and should be considered as falling within the scope of the invention described herein. In particular, further embodiments can be formed from the features described above.

In the claims which follow and in the preceding description of the invention, except where the context indicates otherwise due to express language or necessary implication, the word “comprises” or variations such as “comprises” or “comprising” is used in an inclusive sense, i.e. to specify the presence of the stated features but not to preclude the presence or addition of further features in various embodiments of the invention.

Further aspects of the method will be apparent from the above description of the gaming system. Persons skilled in the art will also appreciate that the method could be embodied in program code. The program code could be supplied in a number of ways, for example on a computer readable medium, such as a disc or a memory (for example, that could replace part of memory 103) or as a data signal (for example, by downloading it from a server).

It is to be understood that, if any prior art publication is referred to herein, such reference does not constitute an admission that the publication forms a part of the common general knowledge in the art, in the United States, Australia, or any other country.

Certain embodiments contemplate methods, systems and computer program products on any machine-readable media to implement functionality described above. Certain embodiments may be implemented using an existing computer processor, or by a special purpose computer processor incorporated for this or another purpose or by a hard-wired and/or firmware system, for example.

Some or all of the system, apparatus, and/or article of manufacture components described above, or parts thereof, can be implemented using instructions, code, and/or other software and/or firmware, etc., stored on a machine accessible or readable medium and executable by, for example, a processor system (e.g., the example processor system 1410 of FIG. 14). When any of the appended claims are read to cover a purely software and/or firmware implementation, at least one of the components is hereby expressly defined to include a tangible medium such as a memory, DVD, CD, etc. storing the software and/or firmware.

FIG. 13 includes a flow diagram representative of machine readable and executable instructions or processes that can be executed to implement the example systems, apparatus, and article of manufacture described herein. The example process of FIG. 13 can be performed using a processor, a controller and/or any other suitable processing device. For example, the example processes of FIG. 13 can be implemented in coded instructions stored on a tangible medium such as a flash memory, a read-only memory (ROM) and/or random-access memory (RAM) associated with a processor (e.g., the processor 1412 of FIG. 14). Alternatively, some or all of the example process of FIG. 13 can be implemented using any combination(s) of application specific integrated circuit(s) (ASIC(s)), programmable logic device(s) (PLD(s)), field programmable logic device(s) (FPLD(s)), discrete logic, hardware, firmware, etc. Also, some or all of the example process of FIG. 13 can be implemented manually or as any combination(s) of any of the foregoing techniques, for example, any combination of firmware, software, discrete logic and/or hardware. Further, although the example process of FIG. 13 is described with reference to the flow diagram of FIG. 13, other methods of implementing the process of FIG. 13 can be employed. For example, the order of execution of the blocks may be changed, and/or some of the blocks described may be changed, eliminated, sub-divided, or com-
bined. Additionally, any or all of the example process of FIG. 13 can be performed sequentially and/or in parallel by, for example, separate processing threads, processors, devices, discrete logic, circuits, etc.

[0121] One or more of the components of the systems and/or blocks of the methods described above may be implemented alone or in combination in hardware, firmware, and/or as a set of instructions in software, for example. Certain embodiments may be provided as a set of instructions residing on a computer-readable medium, such as a memory, hard disk, DVD, or CD. For execution on a general purpose computer or other processing device, certain embodiments of the present invention may omit one or more of the method blocks and/or perform the blocks in a different order than the order listed. For example, some blocks may not be performed in certain embodiments of the present invention. As a further example, certain blocks may be performed in a different temporal order, including simultaneously, than listed above.

[0122] Certain examples include computer-readable media for carrying or having computer-executable instructions or data structures stored thereon. Such computer-readable media may be any available media that may be accessed by a general purpose or special purpose computer or other machine with a processor. By way of example, such computer-readable media may comprise RAM, ROM, PROM, EPROM, EEPROM, Flash, CD-ROM or other optical disk storage, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to carry or store desired program code in the form of computer-executable instructions or data structures and which can be accessed by a general purpose or special purpose computer or other machine with a processor. Combinations of the above are also included within the scope of computer-readable media. Computer-executable instructions comprise, for example, instructions and data which cause a general purpose computer, special purpose computer, or special purpose processing machines to perform a certain function or group of functions.

[0123] Generally, computer-executable instructions include routines, programs, objects, components, data structures, etc., that perform particular tasks or implement particular abstract data types. Computer-executable instructions, associated data structures, and program modules represent examples of program code for executing steps of certain methods and systems disclosed herein. The particular sequence of such executable instructions or associated data structures represent examples of corresponding acts for implementing the functions described in such steps.

[0124] Examples can be practiced in a networked environment using logical connections to one or more remote computers having processors. Logical connections may include a local area network (LAN) and a wide area network (WAN) that are presented here by way of example and not limitation. Such networking environments are commonplace in office-wide or enterprise-wide computer networks, intranets and the Internet and may use a wide variety of different communication protocols. Those skilled in the art will appreciate that such network computing environments will typically encompass many types of computer system configurations, including personal computers, hand-held devices, multi-processor systems, microprocessor-based or programmable consumer electronics, network PCs, minicomputers, mainframe computers, and the like. Examples can also be practiced in distributed computing environments where tasks are performed by local and remote processing devices that are linked (either by hardwired links, wireless links, or by a combination of hardwired or wireless links) through a communications network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

[0125] An exemplary system for implementing the overall system or portions of embodiments of the invention might include a general purpose computing device in the form of a computer, including a processing unit, a system memory, and a system bus that couples various system components including the system memory to the processing unit. The system memory may include read only memory (ROM) and random access memory (RAM). The computer may also include a magnetic hard disk drive for reading from and writing to a magnetic hard disk, a magnetic disk drive for reading from or writing to a removable magnetic disk, and an optical disk drive for reading from or writing to a removable optical disk such as a CD ROM or other optical media. The drives and their associated computer-readable media provide nonvolatile storage of computer-executable instructions, data structures, program modules and other data for the computer.

[0126] While the invention has been described with reference to certain embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from its scope. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed, but that the invention will include all embodiments falling within the scope of the appended claims.

1. A gaming controller comprising:
   a symbol generator to provide a plurality of symbols based on one or more random numbers generated by a random number generator, the plurality of symbols having varying sizes, the plurality of symbols including a first symbol occupying one symbol position and a second symbol occupying multiple symbol positions, wherein said second symbol includes a plurality of portions, each portion corresponding to one of the multiple symbol positions occupied by said second symbol;
   a comparator determining one or more game outcomes in the plurality of symbols, wherein each of said plurality of portions of said second symbol is evaluated individually to determine whether a winning combination has been formed with said first symbol and a portion of said second symbol, each of said plurality of portions of said second symbol corresponding to a different award amount; and
   a display output outputting the plurality of symbols and an indication of the one or more game outcomes to a gaming display for viewing.

2. A gaming controller as recited in claim 1, wherein the plurality of symbols is generated as part of a reel-based symbol game.

3. A gaming controller as recited in claim 2, wherein the reel-based symbol game comprises electromechanical reels viewable via the gaming display.

4. A gaming controller as recited in claim 2, wherein the reel-based symbol game comprises virtual reels displayed on the gaming display.
5. A gaming controller as recited in claim 1, further comprising awarding a prize to the player based on the one or more game outcomes.

6. A gaming controller as recited in claim 1, wherein the plurality of symbols includes a mix of short symbols and tall symbols with blanks between the symbols.

7. A gaming controller as recited in claim 1, wherein said first symbol is centered at a first symbol position and said second symbol is positioned over a second symbol position and a third symbol position rather than centered at the second symbol position.

8. A gaming controller as recited in claim 1, wherein said plurality of symbols is generated as part of a bonus feature.

9. A gaming controller as recited in claim 1, wherein said first symbol occupies multiple symbol positions.

10. A gaming controller as recited in claim 1, wherein different portions of said second symbol are treated differently in determining the one or more game outcomes.

11. A method of gaming implemented on a gaming machine, the method comprising:

   providing a plurality of symbols based on one or more random numbers, the plurality of symbols including a first symbol occupying one symbol position and a second symbol occupying multiple symbol positions, wherein said second symbol includes a plurality of segments, each segment corresponding to one of the multiple symbol positions occupied by said second symbol;

   determining, using a processor, one or more game outcomes based on the plurality of symbols, wherein each of said plurality of portions of said second symbol is evaluated individually to determine whether a winning combination has been formed with said first symbol and a segment of said second symbol, each of said plurality of portions of said second symbol corresponding to a different award amount;

   and

   outputting the plurality of symbols and an indication of the one or more game outcomes to a gaming display for viewing.

12. A method as recited in claim 11, wherein the plurality of symbols is generated as part of a reel-based symbol game.

13. A method as recited in claim 12, wherein the reel-based symbol game comprises electromechanical reels viewable via the gaming display.

14. A method as recited in claim 12, wherein the reel-based symbol game comprises virtual reels displayed on the gaming display.

15. A method as recited in claim 11, further comprising awarding a prize to the player based on the one or more game outcomes.

16. A method as recited in claim 11, wherein the plurality of symbols includes a mix of short symbols and tall symbols with blanks between the symbols.

17. A method as recited in claim 11, wherein said first symbol is centered at a first symbol position and said second symbol is positioned over a second symbol position and a third symbol position rather than centered at the second symbol position.

18. A method as recited in claim 11, wherein said plurality of symbols is generated as part of a bonus feature.

19. A method as recited in claim 11, wherein said first symbol occupies multiple symbol positions.

20. A method as recited in claim 11, wherein different portions of said second symbol are treated differently in determining the one or more game outcomes.

21. An article of manufacture comprising:

   a computer readable storage medium; and

   executable program instructions embodied in the computer readable storage medium that when executed by a programmable system cause the system to perform functions that implement a gaming controller comprising:

   a symbol generator to provide a plurality of symbols based on one or more random numbers generated by a random number generator, the plurality of symbols including a first symbol occupying one symbol position and a second symbol occupying multiple symbol positions, wherein said second symbol includes a plurality of portions, each portion corresponding to one of the multiple symbol positions occupied by said second symbol;

   a comparator determining one or more game outcomes in the plurality of symbols, wherein each of said plurality of portions of said second symbol is evaluated individually to determine whether a winning combination has been formed with said first symbol and a portion of said second symbol, each of said plurality of portions of said second symbol corresponding to a different award amount; and

   a display output outputting the plurality of symbols and an indication of the one or more game outcomes to a gaming display for viewing.

22. An article of manufacture as recited in claim 21, wherein the player combination of symbols is generated as part of a reel-based symbol game.

23. An article of manufacture as recited in claim 22, wherein the reel-based symbol game comprises electromechanical reels viewable via the gaming display.

24. An article of manufacture as recited in claim 22, wherein the reel-based symbol game comprises virtual reels displayed on the gaming display.

25. An article of manufacture as recited in claim 21, wherein the plurality of symbols includes a mix of short symbols and tall symbols with blanks between the symbols.

26. A method as recited in claim 21, wherein said first symbol is centered at a first symbol position and said second symbol is positioned over a second symbol position and a third symbol position rather than centered at the second symbol position.

27. A gaming system comprising:

   a player interface comprising a display for viewing by a player;

   a game controller arranged to provide:

   a symbol generator to provide a plurality of symbols based on one or more random numbers generated by a random number generator, the plurality of symbols including a first symbol occupying one symbol position and a second symbol occupying multiple symbol positions, wherein said second symbol includes a plurality of portions, each portion corresponding to one of the multiple symbol positions occupied by said second symbol; and

   a comparator determining one or more game outcomes in the plurality of symbols, wherein each of said plurality of portions of said second symbol is evaluated individually to determine whether a winning combination has been formed with said first symbol and a portion of said second symbol, each of said plurality of portions of said second symbol corresponding to a different award amount; and
a display output outputting the plurality of symbols and an
indication of the one or more game outcomes to a gaming display for viewing.

28. A gaming system as recited in claim 27, wherein the
player combination of symbols is generated as part of a reel-based symbol game.

29. A gaming system as recited in claim 28, wherein the
reel-based symbol game comprises electromechanical reels
viewable via the gaming display.

30. A gaming system as recited in claim 28, wherein the
reel-based symbol game comprises virtual reels displayed on
the gaming display.

31. A gaming system as recited in claim 27, further comprising awarding a prize to the player based on the one or
more game outcomes.

32. A gaming system as recited in claim 27, wherein the
player interface comprises at least one of a set of electromechanical reels, a video display, and an overlay with respect to
a set electromechanical reels.

33. A gaming system as recited in claim 27, wherein a prize
is awarded when said first symbol and said second symbol and a third symbol are positioned on and above a pay line.

34. A gaming system as recited in claim 27, wherein a prize
is awarded when said first symbol and said second symbol and a third symbol are positioned on and below a pay line.

35. A gaming system as recited in claim 27, wherein a prize
is awarded when said first symbol and said second symbol and a third symbol are positioned on and a mix of both above
and below a pay line.

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