CLAIMS

1. A method comprising:

displaying, by a first computing device comprising a display, each of one or more characters at a location of one or more locations within the display;

receiving, by the first computing device from a second computing device, data indicating at least one selected location of the one or more locations within the display;

making a determination, by the first computing device, that at least one character of the one or more characters matches a predetermined authentication code, wherein each character of the at least one character is displayed at a location of the at least one selected location within the display; and

after making the determination, sending, by the first computing device, a message authorizing a financial transaction.

2. The method of claim 1, wherein the one or more characters include exactly N or more than N characters, wherein the one or more locations include exactly N locations, and wherein N is a positive integer greater than one.

~~3. The method of claim 1, wherein the one or more characters include more than N characters, wherein the one or more locations include exactly N locations, and wherein N is a positive integer greater than one.~~

43. The method of ~~any of~~ claims 1~~-3~~ or 2, wherein the one or more locations within the display comprise one or more locations arranged in a grid pattern within the display.

54. The method of claim 43, wherein receiving the data indicating the at least one selected location within the display comprises, for each of the at least one selected location, receiving at least one of (i) a first coordinate and a second coordinate that identify a location within the grid pattern and (ii) a grid position that identifies the location within the grid pattern.

65. The method of any of claims 1-53, wherein the one or more characters include at least one numeral., and/or

~~7. The method of any of claims 1-6,~~ wherein the one or more characters include at least one letter., and/or

~~8. The method of any of claims 1-7,~~ wherein the one or more characters include multiple characters that are mutually distinct.

96. The method of any of claims 1-84, wherein the determination is a first determination, the method further comprising:

making a second determination, by the first computing device, that each of the at least one character is displayed at a location of the at least one selected location within the display; and

making the first determination based, at least in part, on the second determination.

107. The method of any of claims 1-95, further comprising:

randomly assigning a location of the one or more locations to each of the one or more characters; and

displaying each character of the one or more characters at the location randomly assigned to the character.

~~118~~. The method of any of claims 1-~~106~~, wherein the display is a first display, wherein the received data indicating the at least one selected location of the one or more locations within the first display comprises data indicating at least one selected location within a second display of the second computing device, and wherein each location of the at least one selected location within the second display corresponds respectively to a location of the at least one selected location within the first display.

~~129~~. The method of any of claims 1-~~95~~ and ~~117~~,

wherein receiving the data indicating the at least one selected location includes receiving, by the first computing device from the second computing device, a sequence of multiple data packets representing multiple respective location selections of the at least one selected location, and

wherein the method further comprises either:

prior to receiving each data packet, randomly assigning, by the first computing device, a location of the one or more locations to each of the one or more characters; and

prior to receiving each data packet, displaying each of the one or more characters at the location assigned to each of the one or more characters., or

~~13. The method of any of claims 1-9 and 11,~~

~~wherein receiving the data indicating the at least one selected location includes receiving, by the first computing device from the second computing device, a sequence of~~

~~multiple data packets representing multiple respective location selections of the at least one selected location, and~~

~~wherein the method further comprises:~~

prior to the first computing device receiving any data packet of the sequence, randomly assigning, by the first computing device, a location of the one or more locations to each of the one or more characters; and

displaying each of the one or more characters at the location assigned to each of the one or more characters as each data packet is received.

~~14~~10. The method of ~~any of~~ claim~~s 10, 12, and 13~~ 6 or 8, wherein randomly assigning a location of the one or more locations to each of the one or more characters comprises assigning a different location to each of the one or more characters.

~~15~~11. The method of ~~any of~~ claim~~s 12 and 13~~ 8, further comprising, for each received data packet, displaying an indication, within the display of the first computing device, that the data packet has been received~~.~~ and/or further comprising:

~~16. The method of any of claims 12 and 13, further comprising:~~

determining by the first computing device, based on the sequence of data packets, a sequence of characters that are displayed respectively at the locations represented respectively by the received data packets;

determining, by the first computing device, that the determined sequence of characters matches the predetermined authentication code; and

sending the message based on determining that the sequence matches the predetermined authorization code.

~~17~~12. The method of claim ~~16~~11, further comprising:

receiving, by the first computing device from a storage device inserted into a data port of the first computing device, data representing the predetermined authentication code; and

using the data representing the predetermined authorization code to determine that the determined sequence of characters matches the predetermined authentication code.

~~18~~13. The method of any of claims 1-~~17~~10, wherein the message authorizing the financial transaction is sent to the second computing device.

~~19~~14. The method of claim ~~18~~12, wherein the message is a first message, and wherein sending the first message comprises sending a command, by the first computing device to the second computing device, for the second computing device to send a second message, to a third computing device, authorizing the financial transaction.

~~20~~15. The method of claim ~~19~~14, wherein the first message and the second message both include an encrypted authorization code.

~~21~~16. The method of any of claims 1-~~17~~10, wherein the message authorizing the financial transaction is sent to a third computing device.

~~22~~17. The method of any of claims 1-~~21~~16, further comprising:

detecting a change in state of the first computing device; and

displaying each of the one or more characters in response to detecting the change in state.

~~23~~18. The method of claim ~~22~~17, wherein detecting the change in state of the first computing device comprises either determining that a communication link has been established between the first computing device and the second computing device~~.~~, or

~~24. The method of claim 22, wherein detecting the change in state of the first computing device comprises~~ receiving a command, from the second computing device, to display each of the one or more characters.

~~25~~19. A method comprising:

receiving, by a first computing device comprising a first display, input indicating one or more selected locations within the first display, wherein the one or more selected locations within the first display correspond respectively to one or more locations within a second display of a second computing device;

sending, by the first computing device to the second computing device, data representing the input;

receiving, by the first computing device from the second computing device, a first message indicating a match between (i) one or more characters displayed respectively at the one or more locations within the second display and (ii) a predetermined authentication code; and

sending, by the first computing device to a third computing device, a second message authorizing a financial transaction.

~~26~~20. The method of claim ~~25~~14, wherein the first display is a touch screen, and wherein receiving the input indicating the one or more selected locations within the first display comprises receiving touch input at the one or more selected locations of the touch screen.

~~27~~21. The method of claim ~~26~~20, further comprising:

displaying one or more boundaries defining the one or more locations within the touch screen; and

wherein receiving the touch input at the one or more selected locations of the touch screen comprises receiving touch input at the one or more locations defined by the one or more boundaries.

~~28~~22. The method of ~~any of~~ claim~~s 25-27~~ 14 or 15, wherein the one or more locations within the first display comprise one or more locations arranged in a first grid pattern within the first display, and wherein the one or more locations within the second display comprise one or more locations arranged in a second grid pattern within the second display.

~~29~~23. The method of claim ~~28~~22, wherein sending the data representing the input comprises, for each of the one or more selected locations within the first display, either sending at least one of (i) a first coordinate and a second coordinate that identify a location within the first grid pattern and (ii) a grid position that identifies the location within the first grid pattern~~.~~, or

~~30. The method of claim 28, wherein sending the data representing the input comprises, for each of the one or more selected locations within the first display,~~ sending at least one of (i) a first coordinate and a second coordinate that identify a location within the second grid pattern and (ii) a grid position that identifies the location within the second grid pattern.

~~31~~24. The method of any of claims ~~25~~14-~~30~~16, further comprising:

sending, by the first computing device to the second computing device, a sequence of multiple data packets representing multiple respective location selections of the one or more selected locations within the first display;

for each sent data packet, receiving, by the first computing device from the second computing device, an indication that the sent data packet was received by the second computing device; and

in response to each received indication, displaying an indication that the sent data packet corresponding to the received indication was received by the second computing device.

~~32~~25. The method of any of claims ~~25~~14-~~31~~17, further comprising:

receiving, by the first computing device from the second computing device, a transaction authorization code,

wherein sending the second message comprises sending, by the first computing device to the third computing device, the transaction authorization code.

~~33~~26. The method of any of claims ~~25~~14-~~32~~18, further comprising, prior to receiving the input, sending, to the second computing device, a command to display the one or more characters.

~~34~~27. A computer-readable medium storing instructions that when executed by a processor of a first computing device cause the first computing device to perform acts in accordance with a method of any of claims 1 to 19~~,comprising:~~

~~displaying each of one or more characters at a location of one or more locations within a display of the first computing device;~~

~~receiving, from a second computing device, data indicating at least one selected location of the one or more locations within the display;~~

~~making a determination, that at least one character of the one or more characters matches a predetermined authentication code, wherein each character of the at least one character is displayed at a location of the at least one selected location within the display; and~~

~~after making the determination, sending, a message authorizing a financial transaction.~~

~~35. The computer readable medium of claim 34, wherein the one or more characters include exactly N characters, wherein the one or more locations include exactly N locations, and wherein N is a positive integer greater than one.~~

~~36. The computer readable medium of claim 34, wherein the one or more characters include more than N characters, wherein the one or more locations include exactly N locations, and wherein N is a positive integer greater than one.~~

~~37. The computer-readable medium of any of claims 34-36, wherein the one or more locations within the display comprise one or more locations arranged in a grid pattern within the display.~~

~~38. The computer-readable medium of claim 37, wherein receiving the data indicating the at least one selected location within the display comprises, for each of the at least one selected location, receiving at least one of (i) a first coordinate and a second coordinate that identify a location within the grid pattern and (ii) a grid position that identifies the location within the grid pattern.~~

~~39. The computer-readable medium of any of claims 34-38, wherein the one or more characters include at least one numeral.~~

~~40. The computer-readable medium of any of claims 34-39, wherein the one or more characters include at least one letter.~~

~~41. The computer-readable medium of any of claims 34-40, wherein the one or more characters include multiple characters that are mutually distinct.~~

~~42. The computer-readable medium of any of claims 34-41, wherein the determination is a first determination, the acts further comprising:~~

~~making a second determination that each of the at least one character is displayed at a location of the selected at least one location within the display; and~~

~~making the first determination based, at least in part, on the second determination.~~

~~43. The computer-readable medium of any of claims 34-42, the acts further comprising:~~

~~randomly assigning a location of the one or more locations to each of the one or more characters; and~~

~~displaying each character of the one or more characters at the location randomly assigned to the character.~~

~~44. The computer-readable medium of any of claims 34-43, wherein the display is a first display, wherein the received data indicating the at least one selected location of the one or more locations within the first display comprises data indicating at least one selected location within a second display of the second computing device, and wherein each location of the at least one selected location within the second display corresponds respectively to a location of the at least one selected location within the first display.~~

~~45. The computer-readable medium of any of claims 34-42 and 44,~~

~~wherein receiving the data indicating the at least one selected location includes receiving, from the second computing device, a sequence of multiple data packets representing multiple respective location selections of the at least one selected location, and~~

~~wherein the acts further comprise:~~

~~prior to receiving each data packet, randomly assigning a location of the one or more locations to each of the one or more characters; and~~

~~prior to receiving each data packet, displaying each of the one or more characters at the location assigned to each of the one or more characters.~~

~~46. The computer-readable medium of any of claims 34-42 and 44,~~

~~wherein receiving the data indicating the at least one selected location includes receiving, from the second computing device, a sequence of multiple data packets representing multiple respective location selections of the at least one selected location, and~~

~~wherein the acts further comprise:~~

~~prior to receiving any data packet of the sequence, randomly assigning a location of the one or more locations to each of the one or more characters; and~~

~~displaying each of the one or more characters at the location assigned to each of the one or more characters as each data packet is received.~~

~~47. The computer-readable medium of any of claims 43, 45, and 46, wherein randomly assigning a location of the one or more locations to each of the one or more characters comprises assigning a different location to each of the one or more characters.~~

~~48. The computer-readable medium of any of claims 45 and 46, the acts further comprising, for each received data packet, displaying an indication, within the display of the first computing device, that the data packet has been received.~~

~~49. The computer-readable medium of any of claims 45 and 46, the acts further comprising:~~

~~determining, based on the sequence of data packets, a sequence of characters that are displayed respectively at the locations represented respectively by the received data packets;~~

~~determining, that the determined sequence of characters matches the predetermined authentication code; and~~

~~sending the message based on determining that the sequence matches the predetermined authorization code.~~

~~50. The computer-readable medium of claim 49, the acts further comprising:~~

~~receiving, from a storage device inserted into a data port of the first computing device, data representing the predetermined authentication code; and~~

~~using the data representing the predetermined authorization code to determine that the determined sequence of characters matches the predetermined authentication code.~~

~~51. The computer-readable medium of any of claims 34-50, wherein the message authorizing the financial transaction is sent to the second computing device.~~

~~52. The computer-readable medium of claim 51, wherein the message is a first message, and wherein sending the first message comprises sending a command, to the second computing device, for the second computing device to send a second message, to a third computing device, authorizing the financial transaction.~~

~~53. The computer-readable medium of claim 52, wherein the first message and the second message both include an encrypted authorization code.~~

~~54. The computer-readable medium of any of claims 34-50, wherein the message authorizing the financial transaction is sent to a third computing device.~~

55. The computer-readable medium of any of claims 34-54, wherein the computer-readable medium is a non-transitory computer-readable medium.

56. The computer-readable medium of any of claims 34-55, wherein the acts further comprise:

detecting a change in state of the first computing device; and

displaying each of the one or more characters in response to detecting the change in state.

57. The computer-readable medium of claim 56, wherein detecting the change in state of the first computing device comprises determining that a communication link has been established between the first computing device and the second computing device.

58. The computer-readable medium of claim 56, wherein detecting the change in state of the first computing device comprises receiving a command, from the second computing device, to display each of the one or more characters.

59. A computer-readable medium storing instructions that when executed by a processor of a first computing device cause the first computing device to perform acts comprising:

receiving input indicating one or more selected locations within a first display of the first computing device, wherein the one or more selected locations within the first display

correspond respectively to one or more locations within a second display of a second computing device;

sending, to the second computing device, data representing the input;

receiving, from the second computing device, a first message indicating a match between (i) one or more characters displayed respectively at the one or more locations within the second display and (ii) a predetermined authentication code; and

sending, to a third computing device, a second message authorizing a financial transaction.

60. The computer-readable medium of claim 59, wherein the first display is a touch screen, and wherein receiving the input indicating the one or more selected locations within the first display comprises receiving touch input at the one or more selected locations of the touch screen.

61. The computer-readable medium of claim 60, the acts further comprising:

displaying one or more boundaries defining the one or more locations within the touch screen; and

wherein receiving the touch input at the one or more selected locations of the touch screen comprises receiving touch input at the one or more locations defined by the one or more boundaries.

62. The computer-readable medium of any of claims 59-60, wherein the one or more locations within the first display comprise one or more locations arranged in a first grid pattern within the first display, and wherein the one or more locations within the second

~~display comprise one or more locations arranged in a second grid pattern within the second display.~~

~~63. The computer-readable medium of claim 62, wherein sending the data representing the input comprises, for each of the one or more selected locations within the first display, sending at least one of (i) a first coordinate and a second coordinate that identify a location within the first grid pattern and (ii) a grid position that identifies the location within the first grid pattern.~~

~~64. The computer-readable medium of claim 62, wherein sending the data representing the input comprises, for each of the one or more selected locations within the first display, sending at least one of (i) a first coordinate and a second coordinate that identify a location within the second grid pattern and (ii) a grid position that identifies the location within the second grid pattern.~~

~~65. The computer-readable medium of any of claims 59-64, the acts further comprising:~~
~~sending, to the second computing device, a sequence of multiple data packets representing multiple respective location selections of the one or more selected locations within the first display;~~
~~for each sent data packet, receiving, from the second computing device, an indication that the sent data packet was received by the second computing device; and~~
~~in response to each received indication, displaying an indication that the sent data packet corresponding to the received indication was received by the second computing device.~~

~~66. The computer-readable medium of any of claims 59-65, the acts further comprising:~~

~~receiving, from the second computing device, a transaction authorization code,~~

~~wherein sending the second message comprises sending, to the third computing device, the transaction authorization code.~~

~~67. The computer-readable medium of any of claims 59-66, wherein the computer-readable medium is a non-transitory computer-readable medium.~~

~~68. The computer-readable medium of any of claims 59-67, the acts further comprising,~~

~~prior to receiving the input, sending, to the first computing device, a command to display the one or more characters.~~

~~69~~28. A first computing device comprising:

a processor;

a display;

a communication interface; and

a computer-readable medium in accordance with claim 20.~~storing instructions that when executed by the processor cause the first computing device to perform acts comprising:~~

~~displaying each of one or more characters at a location of one or more locations within the display;~~

~~receiving, via the communication interface from a second computing device, data indicating at least one selected location of the one or more locations within the display;~~

~~making a determination, that at least one character of the one or more characters matches a predetermined authentication code, wherein each character of the at least one character is displayed at a location of the at least one selected location within the display; and~~

~~after making the determination, sending a message authorizing a financial transaction.~~

~~70. The first computing device of claim 69, wherein the one or more characters include exactly N characters, wherein the one or more locations include exactly N locations, and wherein N is a positive integer greater than one.~~

~~71. The first computing device of claim 69, wherein the one or more characters include more than N characters, wherein the one or more locations include exactly N locations, and wherein N is a positive integer greater than one.~~

~~72. The first computing device of any of claims 69-71, wherein the one or more locations within the display comprise one or more locations arranged in a grid pattern within the display.~~

~~73. The first computing device of claim 72, wherein receiving the data indicating the at least one selected location within the display comprises, for each of the at least one selected location, receiving at least one of (i) a first coordinate and a second coordinate that identify a location within the grid pattern and (ii) a grid position that identifies the location within the grid pattern.~~

74. The first computing device of any of claims 69-73, wherein the one or more characters include at least one numeral.

75. The first computing device of any of claims 69-74, wherein the one or more characters include at least one letter.

76. The first computing device of any of claims 69-75, wherein the one or more characters include multiple characters that are mutually distinct.

77. The first computing device of any of claims 69-76, wherein the determination is a first determination, the acts further comprising:

making a second determination that each of the at least one character is displayed at a location of the selected at least one location within the display; and

making the first determination based, at least in part, on the second determination.

78. The first computing device of any of claims 69-77, the acts further comprising:

randomly assigning a location of the one or more locations to each of the one or more characters; and

displaying each character of the one or more characters at the location randomly assigned to the character.

79. The first computing device of any of claims 69-78, wherein the display is a first display, wherein the received data indicating the at least one selected location of the one or more locations within the first display comprises data indicating a at least one selected location

~~within a second display of the second computing device, and wherein each location of the at least one selected location within the second display corresponds respectively to a location of the at least one selected location within the first display.~~

~~80. The first computing device of any of claims 69-77 and 79,~~

~~wherein receiving the data indicating the at least one selected location includes receiving, from the second computing device, a sequence of multiple data packets representing multiple respective location selections of the at least one selected location, and~~

~~wherein the acts further comprise:~~

~~prior to receiving each data packet, randomly assigning a location of the one or more locations to each of the one or more characters; and~~

~~prior to receiving each data packet, displaying each of the one or more characters at the location assigned to each of the one or more characters.~~

~~81. The first computing device of any of claims 69-77 and 79,~~

~~wherein receiving the data indicating the at least one selected location includes receiving, from the second computing device, a sequence of multiple data packets representing multiple respective location selections of the at least one selected location, and~~

~~wherein the acts further comprise:~~

~~prior to receiving any data packet of the sequence, randomly assigning a location of the one or more locations to each of the one or more characters; and~~

~~displaying each of the one or more characters at the location assigned to each of the one or more characters as each data packet is received.~~

~~82. The first computing device of any of claims 78, 80, and 81, wherein randomly assigning a location of the one or more locations to each of the one or more characters comprises assigning a different location to each of the one or more characters.~~

~~83. The first computing device of any of claims 80 and 81, the acts further comprising, for each received data packet, displaying an indication, within the display of the first computing device, that the data packet has been received.~~

~~84. The first computing device of any of claims 80 and 81, the acts further comprising:~~
~~determining, based on the sequence of data packets, a sequence of characters that are displayed respectively at the locations represented respectively by the received data packets;~~
~~determining, that the determined sequence of characters matches the predetermined authentication code; and~~
~~sending the message based on determining that the sequence matches the predetermined authorization code.~~

~~85. The first computing device of claim 84, further comprising a data port, the acts further comprising:~~
~~receiving, from a storage device inserted into the data port, data representing the predetermined authentication code; and~~
~~using the data representing the predetermined authorization code to determine that the determined sequence of characters matches the predetermined authentication code.~~

~~86. The first computing device of any of claims 69-85, wherein the message authorizing the financial transaction is sent to the second computing device.~~

~~87. The first computing device of claim 86, wherein the message is a first message, and wherein sending the first message comprises sending a command, to the second computing device, for the second computing device to send a second message, to a third computing device, authorizing the financial transaction.~~

~~88. The first computing device of claim 87, wherein the first message and the second message both include an encrypted authorization code.~~

~~89. The first computing device of any of claims 69-85, wherein the message authorizing the financial transaction is sent to a third computing device.~~

~~90. The first computing device of any of claims 69-89, wherein the computer-readable medium is a non-transitory computer-readable medium.~~

~~91. The first computing device of any of claims 69-90, the acts further comprising:~~
~~detecting a change in state of the first computing device; and~~
~~displaying each of the one or more characters in response to detecting the change in state.~~

92. The first computing device of claim 91, wherein detecting the change in state of the first computing device comprises determining that a communication link has been established between the first computing device and the second computing device.

93. The method of claim 91, wherein detecting the change in state of the first computing device comprises receiving a command, from the second computing device, to display each of the one or more characters.

94. A first computing device comprising:

a processor;

a first display; and

a computer-readable medium storing instructions that when executed by the processor cause the first computing device to perform acts comprising:

receiving input indicating one or more selected locations within the first display, wherein the one or more selected locations within the first display correspond respectively to one or more locations within a second display of a second computing device;

sending, to the second computing device, data representing the input;

receiving, from the second computing device, a first message indicating a match between (i) one or more characters displayed respectively at the one or more locations within the second display and (ii) a predetermined authentication code; and

sending, to a third computing device, a second message authorizing a financial transaction.

95. The first computing device of claim 94, wherein the first display is a touch screen, and wherein receiving the input indicating the one or more selected locations within the first display comprises receiving touch input at the one or more selected locations of the touch screen.

96. The first computing device of claim 94, the acts further comprising:

displaying one or more boundaries defining the one or more locations within the touch screen; and

wherein receiving the touch input at the one or more selected locations of the touch screen comprises receiving touch input at the one or more locations defined by the one or more boundaries.

97. The first computing device of any of claims 94-96, wherein the one or more locations within the first display comprise one or more locations arranged in a first grid pattern within the first display, and wherein the one or more locations within the second display comprise one or more locations arranged in a second grid pattern within the second display.

98. The first computing device of claim 97, wherein sending the data representing the input comprises, for each of the one or more selected locations within the first display, sending at least one of (i) a first coordinate and a second coordinate that identify a location within the first grid pattern and (ii) a grid position that identifies the location within the first grid pattern.

99. The first computing device of claim 97, wherein sending the data representing the input comprises, for each of the one or more selected locations within the first display, sending at least one of (i) a first coordinate and a second coordinate that identify a location within the second grid pattern and (ii) a grid position that identifies the location within the second grid pattern.

100. The first computing device of any of claims 94-99, the acts further comprising:

sending, to the second computing device, a sequence of multiple data packets representing multiple respective location selections of the one or more selected locations within the first display;

for each sent data packet, receiving, from the second computing device, an indication that the sent data packet was received by the second computing device; and

in response to each received indication, displaying an indication that the sent data packet corresponding to the received indication was received by the second computing device.

101. The first computing device of any of claims 94-100, the acts further comprising:

receiving, from the second computing device, a transaction authorization code,

wherein sending the second message comprises sending, to the third computing device, the transaction authorization code.

102. The first computing device of any of claims 94-101, wherein the computer-readable medium is a non-transitory computer-readable medium.

~~103. The first computing device of any of claims 94-102, the acts further comprising, prior to receiving the input, sending, to the first computing device, a command to display the one or more characters.~~