

Claims

What is claimed is:

1. A method for processing multi-language data entry using a processor, the method comprising:
 - identifying an active language of a keyboard as a first language;
 - receiving a sequence of user actions performed on the keyboard;
 - responsive to the receiving of all user actions in the sequence of user actions, identifying contiguously entered characters displayed in a user-editable section collectively resulting from the receiving of the sequence of user actions;
 - identifying a first user action from among the received sequence of user actions, the first user action being a user action performed on the keyboard that resulted in one of the identified contiguously entered characters being displayed in the user-editable section after the receiving of all of the user actions in the sequence of user actions;
 - identifying a second user action from among the received sequence of user actions, the second user action being a user action performed on the keyboard that did not result in one of the identified contiguously entered characters being displayed in the user-editable section after the receiving of all of the user actions in the sequence of user actions;
 - responsive to the identifying the first user action, determining a first counterpart character by:
 - determining the first counterpart character as a character in a second language different from the first language that is enterable into the user-editable section when the active language of the keyboard is set as the second language and the first user action is performed on the keyboard;
 - responsive to the identifying the second user action, determining a second counterpart character by:
 - determining the second counterpart character as a character in the second language that is enterable into the user-editable section when the active language of the keyboard is set as the second language and the second user action is performed on the keyboard; and
 - returning the first and second counterpart characters.
2. The method of claim 1, further comprising:
 - identifying other first user actions from among the received sequence of user actions, each of the other first user actions being user actions performed on the keyboard that resulted in one of the

identified contiguously entered characters being displayed in the user-editable section after the receiving of all of the user actions in the sequence of user actions;

identifying other second user actions from among the received sequence of user actions, each of the other second user actions being user actions performed on the keyboard that did not result in any of the identified contiguously entered characters being displayed in the user-editable section after the receiving of all of the user actions in the sequence of user actions;

determining other first counterpart characters by:

determining the other first counterpart characters as characters in the second language that are enterable into the user-editable section when the active language of the keyboard is set as the second language and the other first user actions are performed on the keyboard; and

determining other second counterpart characters by:

determining the other second counterpart characters as characters in the second language that are enterable into the user-editable section when the active language of the keyboard is set as the second language and the other second user actions are performed on the keyboard;

wherein the returning includes returning one or more of the other first and second counterpart characters.

3. The method of claim 2, further comprising, prior to the returning, arranging the first counterpart character, second counterpart character, other first counterpart characters, and other second counterpart characters based on the received sequence of user actions.

4. The method of claim 2, wherein the returning comprises replacing the identified contiguously entered characters displayed in the user-editable section with one or more of the first counterpart character, second counterpart character, other first counterpart characters, and other second counterpart characters.

5. The method of claim 2, further comprising searching a subset of a database for a resultant word, the subset of the database having words comprising one or more of the first counterpart character, second counterpart character, other first counterpart characters, and other second counterpart characters;

wherein the returning includes returning the resultant word found in the searching.

6. The method of claim 5, wherein the words in the subset of the database comprise one or more of the first counterpart character, second counterpart character, other counterpart characters, and other second counterpart characters in an order different from the order in which the said characters

would be displayed in the user-editable section if the received sequence of user actions were performed on the keyboard having the active language as the second language.

7. The method of claim 1, wherein one or more of the following apply:

each user action in the received sequence of user actions is a pressing action on a character key of the keyboard; and/or

each user action in the received sequence of user actions is a touching action on an area of a touchscreen.

8. The method of claim 1, wherein the second language is configured to be a non-active language of the keyboard and selectable, by a user, to be an active language of the keyboard.

9. The method of claim 1, wherein the keyboard is configured to have an active language mode to be a first language mode, wherein the first language mode includes one or more rules preventing certain characters in the first language from being displayed contiguously with certain other characters in the first language.

10. A system for processing multi-language data entry using a processor, the system comprising:
a graphical display;
a keyboard; and
a processor in communication with the graphical display and the keyboard, the processor operable to:

identify an active language of the keyboard as a first language;

receive a sequence of user actions performed on the keyboard;

responsive to the receiving of all user actions in the sequence of user actions, identify contiguously entered characters displayed in a user-editable section collectively resulting from the receiving of the sequence of user actions;

identify a first user action from among the received sequence of user actions, the first user action being a user action performed on the keyboard that resulted in one of the identified contiguously entered characters being displayed in the user-editable section after the receiving of all of the user actions in the sequence of user actions;

identify a second user action from among the received sequence of user actions, the second user action being a user action performed on the keyboard that did not result in one of the identified contiguously entered characters being displayed in the user-editable section after the receiving of all of the user actions in the sequence of user actions;

responsive to the identifying the first user action, determine a first counterpart character by:

determining the first counterpart character as a character in a second language different from the first language that is enterable into the user-editable section when the active language of the keyboard is set as the second language and the first user action is performed on the keyboard;

responsive to the identifying the second user action, determine a second counterpart character by:

determining the second counterpart character as a character in the second language that is enterable into the user-editable section when the active language of the keyboard is set as the second language and the second user action is performed on the keyboard; and

return the first and second counterpart characters.

11. A method for processing multi-language data entry using a processor, the method comprising:

identifying an active language of a keyboard as a first language;

receiving a sequence of user actions performed on the keyboard;

responsive to the receiving of all user actions in the sequence of user actions, identifying contiguously entered characters displayed in a user-editable section collectively resulting from the receiving of the sequence of user actions;

identifying a quantity of user actions in the received user actions;

identifying a quantity of characters in the identified contiguously entered characters; and

responsive to a determination that the quantity of user actions in the received user actions is different from the quantity of characters in the identified contiguously entered characters:

identifying a first user action from among the received sequence of user actions, the first user action being a user action performed on the keyboard that displayed one of the identified contiguously entered characters in the user-editable section;

identifying a second user action from among the received sequence of user actions, the second user action being a user action performed on the keyboard that does not correspond to one of the identified contiguously entered characters displayed in the user-editable section;

responsive to the identifying the first user action, determining a first counterpart character by:

determining the first counterpart character as a character in a second language different from the first language that is enterable into the user-editable section when the active

language of the keyboard is set as the second language and the first user action is performed on the keyboard;

responsive to the identifying the second user action, determining a second counterpart character by:

determining the second counterpart character as a character in the second language that is enterable into the user-editable section when the active language of the keyboard is set as the second language and the second user action is performed on the keyboard; and

returning the first and second counterpart characters.

12. The method of claim 11, wherein the keyboard is configured to have an active language mode to be a first language mode, wherein the first language mode includes one or more rules preventing certain characters in the first language from being displayed contiguously with certain other characters in the first language.

13. A system for processing multi-language data entry using a processor, the system comprising:
a graphical display;

a keyboard; and

a processor in communication with the graphical display and the keyboard, the processor operable to:

identify an active language of the keyboard as a first language;

receive a sequence of user actions performed on the keyboard;

responsive to the receiving of all user actions in the sequence of user actions, identify contiguously entered characters displayed in a user-editable section collectively resulting from the receiving of the sequence of user actions;

identify a quantity of user actions in the received user actions;

identify a quantity of characters in the identified contiguously entered characters; and

responsive to a determination that the quantity of user actions in the received user actions is different from the quantity of characters in the identified contiguously entered characters:

identify a first user action from among the received sequence of user actions, the first user action being a user action performed on the keyboard that displayed one of the identified contiguously entered characters in the user-editable section;

identify a second user action from among the received sequence of user actions, the second user action being a user action performed on the keyboard that does not

correspond to one of the identified contiguously entered characters displayed in the user-editable section;

responsive to the identifying the first user action, determine a first counterpart character by:

determining the first counterpart character as a character in a second language different from the first language that is enterable into the user-editable section when the active language of the keyboard is set as the second language and the first user action is performed on the keyboard;

responsive to the identifying the second user action, determine a second counterpart character by:

determining the second counterpart character as a character in the second language that is enterable into the user-editable section when the active language of the keyboard is set as the second language and the second user action is performed on the keyboard; and

return the first and second counterpart characters.

14. A method for processing multi-language data entry using a processor, the method comprising:

identifying, by a processor, contiguously entered characters entered into a user-editable section, including a first identified contiguously entered character;

determining, by the processor, a counterpart character of each identified contiguously entered character, including determining a first determined counterpart character being a counterpart character of the first identified contiguously entered character, the determining including:

identifying a first character key associated with the first identified contiguously entered character, wherein the first character key covers a first area of a keyboard;

identifying a second character key covering a second area of the keyboard, the second area overlapping at least a portion of the first area;

determining the first determined counterpart character, the first determined counterpart character being a character associated with the second character key;

wherein the first identified contiguously entered character is a character enterable into the user-editable section when the keyboard is configured for a first language, the first determined counterpart character is a character enterable into the user-editable section when the keyboard is configured for a second language, and the first language is different from the second language; and

replacing, by the processor, the identified contiguously entered characters entered into the user-editable section with at least the first determined counterpart character.

15. The method of claim 14, further comprising searching a subset of a database for a resultant word, the subset of the database having words comprising the first determined counterpart character.
16. The method of claim 14, further comprising providing the keyboard, the keyboard having a plurality of character keys, wherein at least one of the character keys includes:
 - a visual indication of a character in the first language, and
 - a visual indication of another character in the second language.
17. The method of claim 14, wherein one or more of the following apply:
 - the first character key and the second character key are the same physical keys; and/or
 - the first character key and the second character key are different virtual keys.
18. A method of processing multi-language data entry, the method comprising:
 - receiving a sequence of user actions performed on a keyboard, the keyboard configured to have an active language to be a first language and an active language mode to be a first language mode, wherein the first language mode includes one or more rules preventing certain characters in the first language from being displayed contiguously with certain other characters in the first language;
 - responsive to the receiving of all user actions in the sequence of user actions, identifying contiguously entered characters in the first language displayed in a user-editable section collectively resulting from the receiving of the sequence of user actions;
 - identifying a first user action from among the received sequence of user actions, the first user action being a user action performed on the keyboard that resulted in one of the identified contiguously entered characters in the first language being displayed in the user-editable section after the receiving of all of the user actions in the sequence of user actions;
 - identifying a second user action from among the received sequence of user actions, the second user action being a user action performed on the keyboard that was prevented from displaying a character in the first language in the user-editable section based on the rules;
 - responsive to the identifying the first user action, determining a first counterpart character by:
 - determining the first counterpart character as a character in a second language different from the first language that is enterable into the user-editable section when the active language of the keyboard is set as the second language and the first user action is performed on the keyboard;
 - responsive to the identifying the second user action, determining a second counterpart character by:

determining the second counterpart character as a character in the second language that is enterable into the user-editable section when the active language of the keyboard is set as the second language and the second user action is performed on the keyboard; and

returning the first and second counterpart characters.

19. A system for processing multi-language data entry using a processor, the system comprising:
a graphical display;
a keyboard; and
a processor in communication with the graphical display and the keyboard, the processor operable to:

receive a sequence of user actions performed on the keyboard, the keyboard configured to have an active language to be a first language and an active language mode to be a first language mode, wherein the first language mode includes one or more rules preventing certain characters in the first language from being displayed contiguously with certain other characters in the first language;

responsive to the receiving of all user actions in the sequence of user actions, identify contiguously entered characters in the first language displayed in a user-editable section collectively resulting from the receiving of the sequence of user actions;

identify a first user action from among the received sequence of user actions, the first user action being a user action performed on the keyboard that resulted in one of the identified contiguously entered characters in the first language being displayed in the user-editable section after the receiving of all of the user actions in the sequence of user actions;

identify a second user action from among the received sequence of user actions, the second user action being a user action performed on the keyboard that was prevented from displaying a character in the first language in the user-editable section based on the rules;

responsive to the identifying the first user action, determine a first counterpart character by:

determining the first counterpart character as a character in a second language different from the first language that is enterable into the user-editable section when the active language of the keyboard is set as the second language and the first user action is performed on the keyboard;

responsive to the identifying the second user action, determine a second counterpart character by:

determining the second counterpart character as a character in the second language that is enterable into the user-editable section when the active language of the keyboard is set as the second language and the second user action is performed on the keyboard; and

return the first and second counterpart characters.

20. A method of processing multi-language data entry, the method comprising:

receiving a sequence of user actions performed on a keyboard, the keyboard having an active language set as a Thai language;

responsive to the receiving of all user actions in the sequence of user actions, identifying contiguously entered characters in the Thai language displayed in a user-editable section collectively resulting from the receiving of the sequence of user actions;

identifying a first user action from among the received sequence of user actions, the first user action being a user action performed on the keyboard that resulted in one of the identified contiguously entered characters in the Thai language being displayed in the user-editable section after the receiving of all of the user actions in the sequence of user actions;

identifying a second user action from among the received sequence of user actions, the second user action being a user action performed on the keyboard that did not result in one of the identified contiguously entered characters being displayed in the user-editable section after the receiving of all of the user actions in the sequence of user actions;

responsive to the identifying the first user action, determining a first counterpart character by:

determining the first counterpart character as a character in an English language that is enterable into the user-editable section when the active language of the keyboard is set as the English language and the first user action is performed on the keyboard;

responsive to the identifying the second user action, determining a second counterpart character by:

determining the second counterpart character as a character in the English language that is enterable into the user-editable section when the active language of the keyboard is set as the English language and the second user action is performed on the keyboard; and

returning the first and second counterpart characters.