## **CP5805 – Assessment 1: Design Problem**

**Function List:**

**main()**: displays the welcome menu before asking the user to choosing an option from the menu by entering a number from one to four. If one, two or three is selected, then main() calls get\_instructions, generate\_simple\_report() or generate\_full\_report() and returns to the welcome menu once the user is finished with that option. If option four is selected then the program exits.

**get\_instructions()**: retrieves the program’s instructions. These are then passed to main() to be displayed to the user.

**get\_valid\_values()**: generates the positive numeric values (five in this case) that will be passed to the statistic-generating functions (that is, get\_simple\_statistics() and get\_full\_statistics()) via main() in order to build the two statistical reports. If the user tries to enter an invalid value such as a negative number, then the function displays an error message to the user and prompts him/her to re-enter a value.

**get\_simple\_statistics()**: generates the statistics (count, sum and mean) that will be included in the simple statistical report. These values are then passed to generate\_simple\_report().

**get\_full\_statistics()**: generates the statistics (count, minimum, maximum, mean and standard deviation) that will be included in the full statistical report. These values are then passed to generate\_full\_report() via main().

**generate\_simple\_report():** uses the data generated by get\_simple\_statistics() to build the simple statistical report that main() will display to the user.

**generate\_full\_report():** uses the data generated by get\_full\_statistics() to build the full statistical report that main() will display to the user.

**IPO Charts**

main()

|  |  |  |
| --- | --- | --- |
| **Input** | **Processing** | **Output** |
| opt\_number | values  number\_of\_values  value\_sum  mean\_value  minimum\_value  maximum\_value  SD\_value | program\_instructions  simple\_report  full\_report |

get\_instructions()

|  |  |  |
| --- | --- | --- |
| **Input** | **Processing** | **Output** |
| opt\_number |  | program\_instructions |

get\_valid\_values()

|  |  |  |
| --- | --- | --- |
| **Input** | **Processing** | **Output** |
| prompt |  | values |

get\_simple\_statistics()

|  |  |  |
| --- | --- | --- |
| **Input** | **Processing** | **Output** |
| values |  | number\_of\_values  value\_sum  mean\_value |

get\_full\_statistics()

|  |  |  |
| --- | --- | --- |
| **Input** | **Processing** | **Output** |
| values |  | number\_of\_values  minimum\_value  maximum\_value  mean\_value  SD\_value |

generate\_simple\_report()

|  |  |  |
| --- | --- | --- |
| **Input** | **Processing** | **Output** |
| number\_of\_values  value\_sum  mean\_value |  | simple\_report |

generate\_full\_report()

|  |  |  |
| --- | --- | --- |
| **Input** | **Processing** | **Output** |
| number\_of\_values  minimum\_value  maximum\_value  mean\_value  SD\_value |  | full\_report |