*Functional Specification Template*

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| **Student** | Erick Francisco González Martínez | **Program #** | 6 |
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| **Class Name** | | OutputHandler | |
| **Parent Class** | |  | |
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| **Attributes** | | | |
|  | **Declaration** | | **Description** |
|  | vector<double> results; | | The results to be displayed |
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| **Items** | | | |
|  | **Declaration** | | **Description** |
|  | inline double round(double number) | | Rounds the results in the format rounded to 5 decimals |
|  | string convert(double x) | | Displays the results in the format of a string |
|  | OutputHandler(vector<double> temp):results(temp  {}; | | Initializes the results vector from the temp vector. |
|  | void OutputHandler::display() | | Displays the results in the format required |

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| **Class Name** | | InputReader | |
| **Parent Class** | |  | |
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| **Attributes** | | | |
|  | **Declaration** | | **Description** |
|  | double x | | Stores the x value |
|  | double dof | | Stores the degrees of freedom from the user |
|  | vector<double> results | | Stores the results from the calculation of operations. |
|  | double pi = 3.14159265359 | | Stores the value of pi in a double. |
|  | double maxError = 0.0000001 | | Stores the maximum Error accepted by the iteration in Simspon |
|  | double inputP | | Stores the value of the real p value given by the user. |
|  | double p1, p2 | | Stores the iterations difference between the values; |
|  | double width | | Stores the length of the rectangles increment of the integral |
|  | double num\_seg | | Stores the number of segments into which the integral is divided. |
|  | double delta | | It is the increment of the value in which the iteration is made |
|  | double xk | | Stores the xK real value. |
|  | double dSumXY | | Stores the sum of the multiplication of the pairs |
|  | double dSumX | | Stores the sum of Xs of the pairs |
|  | double dSumY | | Stores the sum of Ys of the pairs |
|  | double dSumY2 | | Stores the sum of squared Ys of the pairs |
|  | double dSumX2 | | Stores the sum of squared Xs of the pairs |
|  | double dAvgX | | Stores the average of Xs of the pairs |
|  | double dAvgY | | Stores the average of Ys of the pairs |
|  | | | |
| **Items** | | | |
|  | **Declaration** | | **Description** |
|  | InputReader() | | Initializes the vector of results in 0 and the fileName as an empty string. |
|  | InputReader(const InputReader &ir) | | Copies the vector and the name of the file. |
|  | InputReader(vector<double> results) | | Initialization of the vector with values |
|  | void handleInput() | | Reads the line of the filename and stores its |
|  | bool openFile() | | Tries to open the file and returns whether its successful. |
|  | void storeValues() | | Stores the values of the file into the data types in the class. |
|  | void calculateValues() | | Calculate the values of the results of each result in the vector of results. |
|  | Double getDistributionT(double dof, double x) | | Calculate the distribution t. |
|  | Double getDistributionGamma(double num) | | Calculate the gamma distribution |
|  | Double calculateIteration(double x, double dof, double num\_seg) | | Calculate the iteration of the Simspon Rule. |