

Functional Specification Template

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Program # 4

Class Name	UIHandler
Parent Class	

Attributes	
Declaration	Description
bufIn : BufferedReader	Variable with the input stream reader from keyboard.

Items	
Declaration	Description
String readValue(sPrompt : String, sErrorMessage : String, patValidStructure : Pattern)	Reads a String value from standard input and keeps prompting the user for the value until it matches the valid structure received as a parameter.

Class Name	ErrorMessages
Parent Class	

Attributes	
Declaration	Description
sINVALID_REAL_NUMBER : String	Constant with the message to display when the user inputs an invalid real number in the system.

sINVALID_INTEGER : String	Constant with the message to display when the user inputs an invalid integer in the system.
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Items	
Declaration	Description

Class Name	AreaUnderTDistribution
Parent Class	ErrorMessages (implemented as interface)

Attributes	
Declaration	Description
dX : double	Variable with the x value that delimits the area under the t-distribution curve to calculate.
iDof: Integer	Variable with the degrees of Freedom of the Distribution to integrate.
dP : double	Variable with the p value calculated of the area under the Distribution T described by the previous variables.

Items	
Declaration	Description
void main()	Method that contains the main logic of the program. It reads the variables dX and iDof from standard input with the aid of UIHandler, and then calculates dP by calling its calculate method.
double gamma(dX : double)	Method that calculates the value of gamma for the parameter received and returns it as a double.
double tStudent(dX : double)	Method that calculates the value of the tStudent function based on the parameter dX and the class variable iDof

double simpson(dX : double, dW : double)	Method that calculates one iteration of the simpson function based on the parameters obtained.
void calculateP()	Method that calculates P using Simpson's method with the aid of the tStudent and Gamma functions.
String toString()	Method that returns a String representation of the object.