MATLAB PROJECT REPORT

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This MATLAB project contains seven MATLAB files total:

1. matlab\_menu.m
   1. This file contains the main code, run this file if you want to run and test my project
   2. The while loop in this file allows the project to run continuously until user choose to exit the program
   3. Detailed instructions will be displayed in the command window guiding user to run the program. Even if user missed a step or input something wrong, error message will be print and user can choose again.
   4. There might be multiple instructions instruct you to “press any key to continue…”
   5. Important usages in this file:
      1. histogram()
      2. histfit()
      3. probplot()
      4. pause
      5. type()
2. print\_menu.m
   1. This file is simply using fprintf printing the menu, I put it in a separate function in order to make the main file lighter
3. validate\_input\_data.m
   1. This file is for input validation, we need to check if the data file exists or if the data file has already been loaded, if not, output error message to inform the user and go back to menu
   2. Also, different types of data file need to use different methods. For this project, just assume data file is of common type: .mat, .txt, .xlsx…
   3. Important usage:
      1. exist(filename, ‘file’)
      2. strfind(str1, str2)
      3. isempty()
      4. load()
      5. xlsread()
4. statistics.m
   1. calculate descriptive statistics: mean, median, mode, variance, min, max, count, standard deviation using MATLAB build-in functions
   2. standard deviation has two methods to calculate, population stdev and sample stdev, to differ them, using std(data, 0) and std(data, 1)
5. output\_file.m
   1. create a file to write from now on, using an identifier instead afterwards
   2. using fprintf to write data into output file
   3. using knowledge of output formatting to format output data
6. prob\_of\_xz.m
   1. given value of x or z, under the condition of normal distribution, using z-table to calculate it’s correspond probability
   2. included several error checking and handling
      1. check if output file has already been set
      2. check if the data is of normal distribution
      3. check if the input file has already been loaded
      4. check if the input value of x and z is a numeric value
   3. important usage:
      1. isnumeric()
      2. normcdf(x, mean, stdev)
      3. normcdf(z)
7. find\_xz.m
   1. given the probability of x or z, under the condition of normal distribution, using z-table to calculate it’s correspond value
   2. included several error checking and handling
      1. check if output file has already been set
      2. check if the data is of normal distribution
      3. check if the input file has already been loaded
      4. check if the input probability of x and z is a numeric value
      5. check if the input probability of x and z is valid(within 0 to 1)

Testing:

1. I used three types of data file: histo.xlsx, CIdata.txt, Class9Data.mat. All of them can be read and given correspond statistic quantities
2. I typed in file: histo.txt, it gives error message that the file doesn’t exists and I can choose again from menu
3. I choose to set output file directly, it gives me error message that input file hasn’t been loaded so I know I was wrong and I can choose again from menu
4. All three plots can be drawn and show on the screen
5. I choose to calculate probability or x/z directly, it gives me error message that the output file hasn’t been set
6. After I’ve set output file, I did step 5 again, it shows me that input file hasn’t been set
7. All files have set up properly, I tried all kinds of error input and the input validation works perfectly fine
8. At last, the output file shows that all the information I want is neatly written in file and also printed on the command window

Here include a screen shot of a sample test:

