WIX1002 Fundamentals of Programming
Lab Report 2

1.James was a dedicated software engineering student at the University of Malaya. He had always been passionate about creating technology that could make a positive impact on people's lives. As he navigated through his coursework and engaged with fellow students, he noticed a common problem - students often struggled to find the right courses or partners for course exchanges. Many times, it led to scheduling conflicts and missed opportunities for students to optimize their academic journey.

Determined to address this issue, James came up with an idea: a web application specifically designed to help UM students exchange courses easily. He called it "CourseSwap."

The first step in his plan was to ensure the security and usability of the platform. Before students could access the main page and start searching for course exchange opportunities, they needed to register an account and set their own password.

Can you assist James to write a Java method that accepts a String as parameter and check whether the user's input is a valid password.

Password rules:
i) A password contains at least 8 characters
ii) A password contains at least 1 capital and small letter
iii) A password contains at least 3 digits
iv) A password must consists only 1 special character

Sample input	Sample output
abcd1234	false
##Bcd1234	false
#ABcd1234	true

2.Lili works as a data analyst at a customer service company. Currently, she is actively engaged in a project aimed at analyzing the median response time for customer inquiries and complaints. The primary goal of this project is to assess and improve the overall efficiency of their customer service operations.Lili has received two unsorted arrays of double values representing time data, and she is looking to calculate the median of this data. Can you provide a Java method that receives 2 double arrays as input and returns a double value as output to help her solve this problem?

Please provide the answer rounded to three decimal places.

Sample input	Sample output
Array1 = {5.2,2.1,17.2} Array2 = {1.3,2.4,2.1,11.1}	2.400
Array1 = {2.5,1.2,3.3,4.7} Array2 = {10.3,4.2,6.6,2.1}	3.750

3. Within the confines of a mathematics classroom, an instructional game is conducted. In this pedagogical exercise, John is provided with a set of 6 numerical values by his teacher. His overarching objective is to judiciously assess the validity of each of these numerical numbers.

If you were in the shoes of John, a computer science student, could you craft a Java method that accepts a string array and return a boolean array as its output to address this issue?

Sample input	Sample output
{"0", "a", ".", "-5E7", "2e+8", "2e2e"}	{True,False,False,True,True,False}
{"2e", "1a", "11e2.5", "-3", "+3", "+-3"}	{False,False,False,True,True,False}

Lab Report

Prepare a report to solve the above problems. The report should contain all the sections as below for each question:

No	Section	Description
1	Problem	Description on the problem
2	Solution	Explanation on how to solve the above problems
3	Sample Input & Output	A few sets of input and output (snapshot)
4	Source Code	Java Source Code

Requirements

1. Group Assignment (4-5 students per group)
2. Cover page that includes all student matric number and full name.
3. Font: Times New Roman 12, Line Spacing: 1 ½ Spacing
4. Submit to Spectrum according to your OCC.