CST8132 Object-Oriented Programming

Lab 5: Exception Handling & Files - College System

Due Date: Check Brightspace for the due dates

Marks: 25 marks (worth 7% of term mark)

Demo: Demo your code and output to your lab professor during your own lab hours.

Recommended Reading: Chapter 11 & 15 of Deitel and Deitel, Java How to Program book

Please do not wait till last day…. This lab will take some time…. Extensions will not be provided.

Exercise

Update lab 3 by making the following changes:

1. One Scanner object for the entire project
2. ArrayLists instead of arrays
3. Exception handling
4. Change the flow of the program as given in the expected output
5. Read from keyboard and read from file. The format of each line of the file is:

- a char – either f or p – f represents full time student, p represents part time student
- an int – Student Number
- a string – First Name
- a string – Last Name
- a string – Email
- a long – Phone Number
- a string – Program Name
- a double – GPA
- for full time students,
    - a double – Tuition Fees
- for part time students,
    - a double – Total Course Fees
    - a double - Credits

You need to have test plan, exception handling, Javadoc, reading from file and keyboard. It should be a full-fledged program which will not crash at any point. **Bad data from user and file should be properly handled**. Check the expected output to see the flow of the program.

In order to print error messages in red, you can use System.err.println().

Expected Output (blue – user input)

```
Enter name of the college: SmartTech
Enter number of students: a
Input Mismatch Exception while reading number of students... please try again!
Enter number of students: -1
Number of students should be positive.. please try again!
Enter number of students: 0
Number of students should be positive.. please try again!
Enter number of students: 5
1. Read Students info from keyboard
2. Read Students info from file
3. Print details of all students
4. Exit
Enter your option: a
Input Mismatch Exception while reading user's choice in main menu... please try again!
1. Read Students info from keyboard
2. Read Students info from file
3. Print details of all students
4. Exit
Enter your option: 9
opt: 9
Invalid entry...selection options 1-4... please try again!
1. Read Students info from keyboard
2. Read Students info from file
3. Print details of all students
4. Exit
Enter your option: 3

###### No students to display######

1. Read Students info from keyboard
2. Read Students info from file
3. Print details of all students
4. Exit
Enter your option: 2
1. Read Students info from keyboard
2. Read Students info from file
3. Print details of all students
4. Exit
Enter your option: 3
==============================================================================================
                              SmartTech College - List of Students

==============================================================================================
    Program|Student#|            Name|           Email|      Phone|  GPA|    Fees| Credits|
        CET|    1002|        John Doe|    doe@test.com|  123456789| 3.94|  956.50|        |
        CST|    1005|   Mark Williams|   mark@test.com|  124578963| 3.56|  980.00|   3.50|
         CP|    1008|      Sam Thomas|    sam@test.com|  321654987| 3.95|  995.75|        |


1. Read Students info from keyboard
2. Read Students info from file
3. Print details of all students
4. Exit
Enter your option: 1
Enter details of student 4:
===========================
1 - Fulltime student
2 - Parttime Student
Enter Student type:
a
Input Mismatch Exception while reading student type
1 - Fulltime student
2 - Parttime Student
Enter Student type:
5
Wrong student type
1 - Fulltime student
2 - Parttime Student
Enter Student type:
1
```

```
Enter program name: CET
Enter student number: 401
Enter first name: Peter
Enter last name: James
Enter email Id: james@test.com
Enter phone number: 321654987
Enter number of courses: 2
Enter mark 1: 95
Enter mark 2: 96
Enter tuition fees: 985
1. Read Students info from keyboard
2. Read Students info from file
3. Print details of all students
4. Exit
Enter your option: 3
==================================================================================================
                           SmartTech College - List of Students

==================================================================================================
  Program|Student#|           Name|          Email|      Phone|  GPA|    Fees| Credits|
     CET|    1002|       John Doe|   doe@test.com|  123456789| 3.94|  956.50|
     CST|    1005|  Mark Williams|  mark@test.com|  124578963| 3.56|  980.00|    3.50|
      CP|    1008|     Sam Thomas|   sam@test.com|  321654987| 3.95|  995.75|
     CET|     401|    Peter James| james@test.com|  321654987| 3.82|  985.00|


1. Read Students info from keyboard
2. Read Students info from file
3. Print details of all students
4. Exit
Enter your option: 4
Goodbye... Have a nice day
```

Submission

Submit your work (all java files, uml, javadoc) to Brightspace by the due date given in Brightspace. Also, demonstrate your work to your lab professor. Both submission and the demo of submitted code are required to get grades.

Grading Scheme

Item	Marks
Person class (correct access specifiers, abstract methods)	Requirement
Student class (properly extended, correct access specifiers, 4 methods)	2
FullTimeStudent class (properly extended, correct access specifiers, 2 methods)	2
ParttimeStudent class (properly extended, correct access specifiers, 2 methods)	2
College class (correct access specifiers, constructors, 3 methods)	3
Policies interface (2 variables, 1 method)	Requirement
CollegeSystemTest class	4
Comments & javadoc	4
UML	3
Test plan	5