

FACULTY: INFORMATION & COMMUNICATION TECHNOLOGY
DEPARTMENT: COMPUTER SCIENCE
SUBJECT: Principles of Programming and Introduction to Programming (Java)
PPB115D/PPG115D/PPBF115D

CT1A



**Tshwane University
of Technology**

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Class Test 1A
Duration: 55 minutes
Date: 05 August 2022
Total: 32
Pages: 7

Examiner
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Moderator
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Instructions

- When you are done, follow the instructions on how to upload. ***If you do not submit your files on EC, you will NOT be supplied with the opportunity to write a sick test or any supplementary test.***
- Save your work frequently.
- This is a closed book test. **NO** additional resources, like the Internet or EC may be used for help. **You may NOT use any flash sticks during the test.**
- Add your name as a comment to the top and the bottom of your files.
- Please note that **marks will be subtracted** if proper coding conventions are not utilised. (e.g. Indentation, vertical spacing between methods, placement of braces, variable names, etc...) A maximum of five marks can be deducted if coding conventions is not followed.

INSTRUCTIONS ON HOW TO WRITE THE TEST ON ELECTRONIC CAMPUS (EC):

1. Create a folder on **D:\ Drive** and rename the folder your **student number**.
2. Save all your work in the folder you have created
3. Open a text editor (notepad++ is recommended) or MS Word and save your document in your student number folder.
4. Open the **browser**.
5. Type <http://ec.tut.ac.za> in the address field of the browser and press enter.
6. Click **Login**.
7. Type in student number for user name and if you are using EC for the first time you must use your student number as your password. (Not applicable any more. Please change to the current situation).
8. Alternatively, you must enter your password. (Same here).
9. Click **Login button**.
10. Click [**Continue**]
11. Select [**Student**]
12. Select [**Tests**]
13. Select [**Webtest 4**]
14. Type or Select **PPB115D/PPG115D/PPBF15D** into the first text field.
15. Type or Select **20222** into the second text field.
16. Type or Select **C** into the third text field (The "**C**" must be a capital letter).
17. Click "**Next**"
18. Click on the "**Write**" button.
19. Click on "**[Start]**" and you will be in the test to submit your answers.
20. Click on [**Section**] on the test to submit each Questions, and click [Go] to submit your answer- Copy your answer and paste it in the space provided.
21. Click [**Test**] to move to the next or previous Questions.
22. Under each question click edit to update your answer.

Question 1 (True or False)**[10 Marks]****Preparation:**

Log into EC and select from the list, your answers in the provided spaces for each question under section 1.

	STATEMENT
1.1	It is possible to have one iteration structure within another iteration that is within a selection control structure.
1.2	The following while loop terminates when total > 20 . <pre>total = 1; while (total < 20) { total++; }</pre>
1.3	A for loop requires an increment/decrement statement for the counter control variable inside the body of the loop as the.
1.4	Initial values for the variables in the tested expression of a while statement do not have to be initialized before the while statement is encountered.
1.5	Value-returning methods can return many values depending on the number of values sent to it.
1.6	When calling a method, you have to provide the method with the required values known as parameters.
1.7	The following is a valid method header in Java. static double determineResults (double perc)
1.8	The following is a valid method call in Java. int results = testMethod(int num1, int num2);
1.9	You can declare your static variables in any method in your class as this variable is known as a class variable.
1.10	A variable which is known only within the method in which it's declare in has a block scope.

Question 2 Static Methods

[22 Marks]

Preparation:

1. Create an application folder in the D drive called "D:\My Documents\StudentNumber\Question2\", where StudentNumber is your actual student number.
2. Create a new file in Notepad++ called Open the "Tutorials.java" file in NotePad++ and complete the question as instructed below.

Tutorials Application

Computer Science department wants to employ student assistants who will assist foundation students with programming skills. They want to pay them a weekly pay using a rate per hour times the number of sessions per week. The rate per hour is **R355.50** and the number of session can range from number 2-4 sessions in a week. A session is 1 hour 30 minutes. The rate must be used as a static member in your program.

Follow the UML diagram Table 2.1, the description on Table 2.2 as well as the partially completed code below to complete the **Tutorials** application class.

Table 2.1

Tutorials
+ <i>main</i> (String []): void + <i>qualify</i> (int, int, int): boolean + <i>calcTutFee</i> (int): double + <i>displayFee</i> (double): void

Table 2.2

	Method name	Description	Marks
2.1.1	main(String [])	<p>In this method do the following:</p> <ul style="list-style-type: none"> • Prompt the user for (See Figure 2.1): <ul style="list-style-type: none"> ○ PPA115D marks, ○ COH115D marks, ○ CFA115D marks. • You must call/invoke/use the method qualify () to check if the student qualifies to be an assistant. • If the students qualifies do the following <ul style="list-style-type: none"> ○ Prompt the user for the number of sessions, number of sessions can be from 2- 8 (See Figure 2.1). ○ You must call/invoke/use the method calcTutFee() to calculate the tutoring fee. ○ Call/invoke/use the method displayValues() to display the tutoring fees, if the calculated amount due not R0 (See Figure 2.1). <ul style="list-style-type: none"> • If amount is R0 display an error message indicating the number of session entered are invalid (See Figure 2.2). • If the students do not qualify display an appropriate error message as indicated in Figure 2.3. 	8
2.1.2	qualify(int, int,int)	<p>This method will receive three parameters and it must then determine if the assistant qualifies or not and it must return a value indicating the status.</p> <p>This method must determine if the student qualifies or not. In order to qualify a student must pass PPA115D with a mark of 60 and above and must either pass COH115 with a mark of 60 and above or CFA115D with a mark of 50 and above respectively.</p>	7
2.1.3	calcTutFee(int)	<p>This method will receive a parameter that will consists of the number sessions and it must then calculate and return the tutorial fee.</p>	4

		Before calculating the tutorial fee the method must first check if the number of session are valid. The number of session must be from 2 to 8. If they are valid, the tutorial fee must be calculated.	
2.1.4	displayFee()	This method will receive one parameter that consists of the tutorial fee and it must display the tutorial fee.	2

Consider the following partially completed Java Application. Re-write the program and also supply the missing code as indicated in the question above.

```

public class Tutorials
{
    // your static variable here

    // Your static methods starts here

    // Your main starts here
    public static void main(String [] args)
    {
        Scanner input= new Scanner(System.in);

        int progr1, compFund, compMath, noSession;
        double payment;

        System.out.print("Enter PPA115D marks:" );
        progr1 = input.nextInt();
        System.out.print("Enter COH115D marks:");
        compMath = input.nextInt();
        System.out.print("Enter CFA115D marks:");
        compFund = input.nextInt();

    }
}

```

Sample output

```
Enter PPA115D marks:60
Enter COH115D marks:50
Enter CFA115D marks:50
Enter number of sessions (2-8)
3
Your tutorig fee R 11198.25
```

Figure 2.1

```
Enter PPA115D marks:60
Enter COH115D marks:65
Enter CFA115D marks:50
Enter number of sessions (2-8)
9
Invalid number of sessions
```

Figure 2.2

```
Enter PPA115D marks for student 50
Enter COH115D marks for student 60
Enter CFA115D marks for student 60
You do not qualify
```

Figure 2.3