



MODULE NAME:	MODULE CODE:
PROGRAMMING 1B	PROG6112

ASSESSMENT TYPE:	TAKE-HOME TEST (PAPER ONLY)
TOTAL MARK ALLOCATION:	60 MARKS
TOTAL TIME:	21 Hours (midnight to 9PM on the same day)

By submitting this assessment, you acknowledge that you have read and understood all the rules as per the terms in the registration contract, in particular the assignment and assessment rules in The IIE Assessment Strategy and Policy (IIE009), the intellectual integrity and plagiarism rules in the Intellectual Integrity Policy (IIE023), as well as any rules and regulations published in the student portal.

INSTRUCTIONS:

1. Please **adhere to all instructions**. These instructions are different from what is normally present, so take time to go through these carefully.
2. **Independent work is required**. Students are not allowed to work together on this assessment. Any contraventions of this will be handled as per disciplinary procedures in The IIE policy.
3. **No material may be copied from original sources, even if referenced correctly, unless it is a direct quote indicated with quotation marks.**
4. All work must be adequately and correctly referenced.
5. You should paraphrase (use your own words) the concepts that you are referencing, rather than quoting directly.
6. Marks will be awarded for the quality of your paraphrasing.
7. This is an open-book assessment.
8. Assessments must be typed unless otherwise specified.
9. **Ensure that you save a copy of your responses.**
 - 9.1. Complete your responses in a Word document.
 - 9.2. The document name must be your **name.student number.Module Code**.
 - 9.3. Once you have completed the assessment, upload your document under the **submission link** in the correct module in Learn.

Additional instructions:

- Calculators are allowed
- Answer All Questions.

1. ASSESSMENTS WRITTEN AT HOME:

- a) *No material may be copied from original sources, even if referenced correctly, unless it is a direct quote indicated with quotation marks.*
- b) *All work must be adequately and correctly referenced.*
- c) *You should paraphrase (use your own words) the concepts that you are referencing, rather than quoting directly.*
- d) *This is an open-book assessment.*
- e) *Assessments must be typed unless otherwise specified.*
- f) ***Ensure that you save a copy of your responses.***
 - i. *Complete your responses in a Word document.*
 - ii. *The document name must be your **student number.Module Code**.*
 - iii. *Once you have completed the assessment, upload your document under the **submission link** in the correct module in Learn.*

Question 1**(Marks: 30)**

Write a Java application to print the number of hospital health inspections performed at three (3) different hospitals over three (3) months. The following table represents the hospitals and the number of inspections per month:

	JAN	FEB	MAR
Hospital 1	4	8	6
Hospital 2	5	4	2
Hospital 3	4	2	8

Using single and two-dimensional arrays, produce the hospital inspection report and include each hospital's average monthly inspection and totals.

Sample screenshot

```

*****
HEALTH INSPECTION REPORT
*****
      JAN      FEB      MAR      AVG
HOSPITAL 1: -->  4        8        6        6
HOSPITAL 2: -->  5        4        2       3.67
HOSPITAL 3: -->  4        2        8       4.67
*****
MONTHLY TOTALS
*****
HOSPITAL 1:      18.0
HOSPITAL 2:      11.0
HOSPITAL 3:      14.0
*****

```

Question 1 Mark Allocation	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Declaring and Populating Arrays Declaration and populating a single and two-dimensional array.	10 Single and two-dimensional arrays were declared and populated without any errors.	5-9 Single and two-dimensional arrays were declared and populated with one or two minor errors.	1-4 Single and two-dimensional arrays were not declared or declared incorrectly, and the populated arrays had many errors.	0 Single and two-dimensional arrays were not declared or declared incorrectly, and the populated arrays had many errors.	
Output Printing of rows and columns in the report.	5 The report displays or prints all the rows and columns of the report.	3-4 The report displays or prints some rows and columns of the report (not all).	1-2 The report has major errors and little output of rows and columns.	0 There is no report of rows and columns.	
Processing and Output <ul style="list-style-type: none">Accumulating and printing the totalsCalculating and printing the averages	15 The program successfully accumulates and prints the totals and calculates and prints the averages	14-8 The program accumulates and prints the totals and calculates and prints the averages with one or two minor errors.	1-7 The program accumulates but does not print the totals and has errors in calculating the averages.	0 The program does not accumulate nor print the totals and/or averages.	

Question 2**(Marks: 30)**

Write a Java console application to print a report and determine if a hospital is due for a health inspection. Make use of an abstract class named `Inspection` that contains variables to store the hospital location, hospital name and the years since the last inspection. This class also creates methods to get the hospital location, name, and years since the last hospital inspection by using the get methods. Create a constructor that accepts the hospital location, name and years since the last inspection as parameters.

The `Inspection` class must implement an `iInspection` interface that contains the following:

```
interface iInspection {  
    public String getLocation();  
    public String getHospitalName();  
    public int getYearsSinceInspection();  
    public String getInspectionNeeded();  
}
```

Create a subclass called `Hospital Inspections` that extends the `Inspection` class. The `Hospital Inspection` class must contain a constructor to accept the hospital location, name and years since inspection as parameters. Write code for the `printInspectionReport` method, which prints the hospital location, hospital name, years since the inspection and whether a hospital inspection is due. Any hospital that has not had an inspection for more than two years is required to have an inspection.

Finally, write a `Use_Inspection` class to instantiate the `Hospital Inspections` class. Sample output is shown below, and you may use the same values to test your application.

Sample screenshot

```

Enter the hospital location: Eastern Cape
Enter the hospital name: St Augustine Hospital
Enter years since last inspection: 3

HOSPITAL INSPECTION REPORT
*****
HOSPITAL LOCATION: Eastern Cape
HOSPITAL NAME: St Augustine Hospital
YEARS SINCE INSPECTION: 3
INSPECTION NEEDED: YES

```

Question 2 Mark Allocation	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Interface Interface class created	5 Public Interface declared correctly.	3-4 Public Interface declared incorrectly with one or two errors.	1-2 Public Interface declared but has some errors.	0 Public Interface not declared.	
Abstract and Constructor The abstract class was created with a Constructor, Variables and Methods.	5 The abstract class was created with a constructor, variables and methods without errors.	3-4 The abstract class was created with a constructor, variables and methods with one or two errors.	1-2 The abstract class was created without a constructor or variables, or methods.	0 There was no Abstract class and no constructor or variables or methods.	
Inheritance and Output A class was created that extends the Inspection class and contains a	10 The class was created and	5-9 The class was created and	1-4 The class was created	0 No class was created	

Constructor and the print method.	extended to the Inspection class and contained a constructor and the print method.	extended to the Inspection class and contained a constructor and the print method. However, there was one error.	and extended to the Inspection class and contained a constructor and the print method. However, there were many errors.	nor extended to the Inspection class.	
The Report / Screen Display The report was produced as per the sample	5 The report was produced.	3-4 The report was partially produced.	1-2 The report was produced with many errors.	0 No report was produced.	
File Saving and Comments File saved correctly with suitable comments used in the solution	5 The File was saved correctly, and suitable comments were used in the solution.	3-4 The File was saved correctly, but not enough comments were used in the solution.	1-2 The File was saved correctly, but there were no suitable comments in the solution.	0 The File was not saved, and there were no comments in the solution.	

END OF PAPER