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.*

Question 1 **(Marks: 30)**

Write a Java application to display a local renovator's monthly home makeover jobs. Display the number of jobs performed for bathroom, kitchen and garden makeovers for a six (6) month period. The table below represents the number of home makeovers performed:

	BATHROOMS	KITCHENS	GARDEN
JANUARY	8	2	5
FEBRUARY	7	4	5
MARCH	5	5	2
APRIL	2	2	3
MAY	7	7	9
JUNE	7	8	5

Using single and two-dimensional arrays, produce the monthly home makeover report and include the total monthly makeover amounts. If the monthly total makeover amounts are greater than or equal to 15, display three stars ***.

Sample screenshot

```
------------------------------------------------------------------------
HOME MAKEOVER REPORT
------------------------------------------------------------------------
                Bathrooms       Kitchens        Garden
JAN             8               2               5
FEB             7               4               5
MAR             5               5               2
APR             2               2               3
MAY             7               7               9
JUN             7               8               5
------------------------------------------------------------------------
MONTHLY TOTALS
------------------------------------------------------------------------
JAN             15      ***
FEB             16      ***
MAR             12
APR             7
MAY             23      ***
JUN             20      ***
------------------------------------------------------------------------
```

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 Population of 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 Accumulating and printing the total monthly home makeover amounts	**10** The program successfully accumulates and prints the total monthly home makeover amounts.	**5-9** The program accumulates and prints the total monthly home makeover amounts with one or	**1-4** The program accumulates but does not print the total monthly home makeover amounts	**0** The program does not accumulate nor print the total monthly home makeover amounts and has	

		two minor errors.	and has errors.	major errors.	
Processing and Decision Making Decision statement to determine whether to print three stars	**5** The program has a decision statement and can print three stars successfully.	**3-4** The program has a decision statement but has a minor error in printing the three stars.	**1-2** The program has no decision statement and has a significant error in printing the three stars.	**0** The program has no decision statement and no output on the three stars.	

Question 2 **(Marks: 30)**

Write a Java console application that will print whether a company should hire more staff based on the current staff level. Use an abstract class named Staff that contains variables to store the number of staff members and location. Create a constructor that accepts the staff number and staff location as parameters. This class also creates get methods to get the staff number, location, and start the hiring process. The Staff class must implement an iStaff interface that contains the following:

```
public interface iStaff
{
   public int getStaffNumber();
   public String getStaffLocation();
   public String getStaffHiringProcess();
}
```

Create a subclass called Staff Hiring that extends the Staff class. The Staff Hiring class must contain a constructor to accept the number of staff members and the staff location as parameters. Write code for the printStaffHiring method, which prints the staff member numbers, staff location and determines if the staff hiring process must occur. The hiring process must start if the staff members are less than 20 at a particular store.

Finally, write a Use Staff class to instantiate the Staff Hiring class. Sample output is shown below, and you may use the same values to test your application.

Sample screenshot

```
Enter the current staff number: 16
Enter the staff hiring location: West Key Store

STAFF HIRING REPORT
*******************
LOCATION: West Key Store
STAFF NUMBER: 16
HIRE STAFF: YES
```

Question 2 Mark Allocation	Levels of Achievement				Feedback
	Excellent	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
Interface iStaff 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 Abstract Staff class created with a Constructor, Variables and Methods.	**10** Abstract Staff class was created with a constructor, variables and methods without errors.	**5-9** Abstract Staff class was created with a constructor, variables and methods with one or two errors.	**1-4** Abstract Staff class was created without a constructor or variables, or methods.	**0** There was no Abstract Staff class and no constructor or variables or methods.	
Inheritance and Output Staff Hiring class created that extends the Staff class and contains a Constructor and the Print Staff Hiring method.	**5** The Staff Hiring class was created and extended to the Staff class and contained a Constructor and the Print Staff Hiring method.	**3-4** The Staff Hiring class was created and extended to the Staff class and contained a Constructor and the Print Staff Hiring method.	**1-2** The Staff Hiring class was created and extended to the Staff class and contained a Constructor and the Print Staff Hiring	**0** No Staff Hiring class was created nor extended to the Staff class.	

		However, there was one error.	method. However, there were many errors.		
The Report The report produced as per the sample	**5** The report was produced as per the sample	**3-4** The report was partially produced as per the sample	**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