

THIS PAPER MUST NOT
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EXAMINATION ROOM

Family Name

Given Names

Student Number

Signature

THE UNIVERSITY OF QUEENSLAND
St. Lucia and Ipswich Campus

Sample Examination

COMP1500: INTRODUCTION TO PROGRAMMING
COMP7901: SOFTWARE ENGINEERING

Time: One hour for working
Ten minutes for perusal before examination begins

This is a multiple choice examination consisting of 20 questions. The questions appear in this paper, but your answers are to be submitted on the special answer sheet supplied to you.

Each question has five possible answers, labelled **A**, **B**, **C**, **D** and **E**. You should select from these **the single, correct answer** to the question and mark the corresponding box for that answer on the answer sheet.

You should attempt **all** 20 questions. All questions have equal value. One mark will be awarded for each correct answer. No marks will be deducted for an incorrect answer, so if you are not certain of the correct answer to a question it is in your interest to make an educated guess from the possible alternatives. However, no marks will be awarded if more than one answer is selected for a question, even if one of the answers selected is correct.

You should indicate your answer by clearly marking the appropriate box on the answer sheet with a 2B pencil. Keep your mark within the box and **erase completely any stray pencil marks on your answer sheet**. Make only one mark per question.

Do **not** use ink or ballpoint pens. Do **not** bend or fold the answer sheet.

It is undesirable to attempt to erase from the answer sheet marked answers which you wish to change. Rather, you should obtain a new answer sheet from the supervisor and copy your answers to the new sheet. You can avoid most problems with erasing by first marking your answers on the *question paper* and later transferring them to the *answer sheet* **only** when you are certain that they will be your final selections. Make sure that you leave yourself adequate time to transfer your answers to the answer sheet. Both this question paper and the answer sheet will be collected at the end of the examination.

Print your Name and Student Number in the space provided at the top of this page, and add your signature. This question paper, as well as the answer sheet, must be handed in for you to gain credit for your answers. Your question paper may be used to confirm answers on the answer sheet (so it is in your interest to indicate your intentions clearly on this paper).

Question 1

What is printed in the Output window by the following Java fragment?

```
System.out.print(""+7/2+7%2);
```

- A 3.51 B 4 C 3.5 D 31 E 3+1

Question 2

What is printed in the Output window by the following Java fragment?

```
for (int i=3; i>=0; i=i-2) System.out.print(i);
```

- A 31 B 321 C 3210 D 1 E 10

Question 3

Suppose `d` is a local variable of type `double`. Which of the following Java expressions will always print in the Output window the value of `d` truncated to display one place of decimal? For example, if `d` is 16.37, the output required is 16.3.

- A `System.out.println((int)(10*d)/10.0);`
- B `System.out.println((int)(10*d/10.0));`
- C `System.out.println((int)(10.0*d/10));`
- D `System.out.println((int)(10.0*d)/10);`
- E `System.out.println(Math.round(10*d)/10.0);`

Question 4

What is printed in the Output window by the following Java fragment?

```
int n = 0;
for (int i=1; i<=4; i++) n = n + i;
System.out.print(n);
```

- A 10 B 6 C 4 D 1 E 0

Question 5

What is printed in the Output window by the following Java fragment?

```
int x = 6;
int y = 3;
while (x >= y) y++;
System.out.print(x-y);
```

- A -2 B -1 C 0 D 1 E 2

Question 6

What is printed in the Output window when the class Swap whose code is given below is compiled and run?

```
public class Swap {

    public static void main (String [ ] args) {
        int x = 5;
        int y = 21;
        swap(x, y);
        System.out.print(x+" "+y);
    }

    public static void swap (int x, int y) {
        int temp = x;
        x = y;
        y = temp;
    }
}
```

- A 5 21 B 21 5 C 5 5 D 21 21 E 26

Question 7

What is printed in the Output window by the following Java fragment?

```
int x = 4;
while (x%4==0 || x/5==1) {
    if (x<9) x = x+5;
    if (x==9) x = x+1;
    if (x>9) x = x-2;
}
System.out.print(x);
```

- A 8 B 9 C 10 D 11 E 13

Question 8

Which of the options is a possible output from the following Java fragment?

```
int x = 0;
int k = 2;
int n = 0;
do {
    n = (int)(k*Math.random( ));
    k = k-1;
    x++;
} while (n!=0);
System.out.print(x);
```

- A 0 B 2 C 3 D 4 E 5

Question 9

What is printed in the Output window by the following Java fragment?

```
int [ ] x = {3, 7, 2, 7};
int max = 0;
for (int i=1; i<x.length; i++)
    if (x[i] >= x[max]) max = i;
System.out.print(max);
```

- A 1 B 2 C 3 D 4 E 7

Question 10

What is printed in the Output window by the following Java fragment?

```
int x = 0;
for (int i=1; i<5; i++)
    for (int j=1; j<i; j++) x++;
System.out.print(x);
```

- A 4 B 5 C 6 D 10 E 12

Question 11

It is intended that the method `noConsecRepeats` return `true` if and only if no two consecutive elements in the array `x` are identical, i.e. no two adjacent elements in the array have the same integer value.

```
public static boolean noConsecRepeats (int [ ] x) {  
    // missing code goes here  
}
```

Which of the following is the missing code from the method `noConsecRepeats`?

- A `boolean b = true;`
 `for (int i=0; i<x.length-1; i++)`
 `if (x[i] == x[i+1]) b = false;`
 `else b = true;`
 `return b;`
- B `for (int i=0; i<x.length-1; i++)`
 `if (x[i] == x[i+1]) return false;`
 `return true;`
- C `boolean b = false;`
 `for (int i=0; i<x.length-1; i++)`
 `if (x[i] == x[i+1]) b = false;`
 `if (b == false) return false;`
 `else return true;`
- D `boolean b = false;`
 `for (int i=0; i<x.length-1; i++)`
 `if (x[i] != x[i+1]) b = true;`
 `return b;`
- E `for (int i=0; i<x.length-1; i++)`
 `if (x[i] != x[i+1]) return true;`
 `return false;`

Question 12

What is printed in the Output window when the class `Treble` whose code is given below is compiled and run?

```
public class Treble {

    public static void main (String [ ] args) {
        int [ ] x = {2, 1, 3};
        int [ ] y = treble(x);
        for (int i=0; i<3; i++) System.out.print(x[i]);
        for (int i=0; i<3; i++) System.out.print(y[i]);
    }

    public static int [ ] treble (int [ ] a) {
        int [ ] b = a;
        for (int i=0; i<a.length; i++) b[i] = 3*b[i];
        return b;
    }
}
```

A 213 B 639 C 213213 D 213639 E 639639

Question 13

We wish to create a window with width 500 pixels and height 400 pixels, and with the upper left corner of the window 200 pixels down and 100 pixels across from the upper left corner of the screen. Which of the following invocations of the method `setBounds` (inherited from the `JFrame` class) will set these dimensions and position?

- A `setBounds(500, 400, 200, 100);`
- B `setBounds(500, 400, 100, 200);`
- C `setBounds(200, 100, 400, 500);`
- D `setBounds(100, 200, 500, 400);`
- E `setBounds(200, 100, 500, 400);`

Question 14

Consider the class UpByOne and its subclass UpByTwo:

```
public class UpByOne {  
    private int num = 0;  
  
    public int getNum ( ) {  
        return num;  
    }  
  
    public void setNum (int x) {  
        num = x;  
    }  
  
    public void up ( ) {  
        num = num + 1;  
    }  
}  
  
public class UpByTwo extends UpByOne {  
  
    public void up ( ) {  
        // missing code goes here  
    }  
}
```

In the class UpByTwo the method up is redefined so that num is increased by 2. Which of the following is the missing code from the method up?

- A num = num + 2;
- B super.up();
super.up();
- C setNum(getNum()) + 2;
- D super.up() + 1;
- E num = getNum() + 2;

Question 15

Consider the class X and its subclass Y:

```
public class X {  
  
    private int x = 3;  
  
    public String toString ( ) {  
        return "x = "+x;  
    }  
}  
  
public class Y extends X {  
  
    private int y = 4;  
  
    public String toString ( ) {  
        // missing code goes here  
    }  
}
```

Consider now the following Java fragment:

```
Y ob = new Y( );  
System.out.print(ob);
```

When this code is executed the following is printed in the Output window:

```
x = 3 and y = 4
```

Which of the following is the missing code from the method `toString` in the class Y?

- A return "x = "+x+" and y = "+y;
- B super.toString();
return " and y = "+y;
- C return super(x)+" and y = "+y;
- D return "x = "+getX()+" and y = "+y;
- E return super.toString()+" and y = "+y;

Question 16

The class `MouseListener` in the `java.awt.event` package implements five instance methods. Which one of the following methods is **not** implemented in this class?

- A `mousePressed`
- B `mouseReleased`
- C `mouseMoved`
- D `mouseEntered`
- E `mouseClicked`

Question 17

It is intended that the following Java fragment print to the Output window the number of lines in the text file `f.txt`.

```
// missing code goes here
int count = 0;
String line = x.readLine();
while (line != null) {
    count++;
    line = x.readLine();
}
System.out.print(count);
x.close( );
```

Which of the following is the missing code from this fragment?

- A `BufferedReader x = new BufferedReader(new FileReader("f.txt"));`
- B `FileReader x = new FileReader(new BufferedReader("f.txt"));`
- C `PrintReader x = new PrintReader(new FileReader("f.txt"));`
- D `FileReader x = new FileReader(new PrintReader("f.txt"));`
- E `BufferedWriter x = new BufferedWriter(new BufferedReader("f.txt"));`

Question 18

Consider the class A:

```
public class A {
    public int x=1;

    public void increaseBy (int n) {
        x = x + n;
    }
}
```

Which of the following Java fragments does **not** produce 4 as output?

- A A a = new A();
 a.x = 3 + a.x;
 System.out.print(a.x);
- B A a = new A();
 a.increaseBy(2);
 a.increaseBy(1);
 System.out.print(a.x);
- C A a = new A(){
 public void increaseBy (int n) {
 super.increaseBy(3);
 }
 };
 a.increaseBy(4);
 System.out.print(a.x);
- D A a = new A();
 a.increaseBy(3);
 System.out.print(a.x);
- E A a = new A(){
 public void increaseBy (int n) {
 }
 };
 a.increaseBy(3);
 System.out.print(a.x);

Question 19

Consider the classes Main and MyFrame:

```
public class Main {

    public static void main (String [ ] args) {
        MyFrame win = new MyFrame( );
        win.setVisible(true);
    }
}

import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
public class MyFrame extends JFrame {

    public MyFrame ( ) {
        setBounds(100, 50, 400, 400);
        JButton b = new JButton("My Button");
        b.addActionListener(new ActionListener( ){
            public void actionPerformed (ActionEvent e) {
                display(43);
            }
        });
        Container c = getContentPane( );
        JPanel p = new JPanel( );
        p.add(b);
        c.add(p, "South");
    }

    public void display (int n) {
        System.out.print(n);
    }
}
```

When these classes are compiled and the Main class run, a window opens containing an action button. Which one of the following statements is true?

- A When the action button is pressed 43 appears in the Output window.
- B The action button is positioned in the centre of the window.
- C When the action button is pressed 43 is displayed in the window containing the action button.
- D The window containing the action button has the title My Button.
- E When the X at the upper right corner of the window containing the action button is pressed the program terminates.

Question 20

What is printed in the Output window by the following Java fragment?

```
try {
    String s = "one";
    int n = Integer.parseInt(s);
    int m = n/(n-1);
    System.out.print(0);
} catch (ArithmeticException e) {
    System.out.print(1);
} catch (NumberFormatException e) {
    System.out.print(2);
} catch (Exception e) {
    System.out.print(3);
}
```

- A 0 B 1 C 2 D 3 E 23

END OF EXAMINATION