Mock Exam

Attached you will find a Mock multiple choice question (MCQ) exam for COMP16121, to assist you in preparing for the actual COMP16121 MCQ Exam in January.

We have endeavoured to make this as much alike the real thing as possible. Here, there are 16 questions, and you will have about 50 minutes to complete them. In the real exam you will have 25 questions, but 2 hours to complete them. The Marking Scheme on this mock exam is the same as will appear on the real exam.

When tackling the Mock Exam it is clearly important for you to do so under exam conditions:

- stick to the time limits
- do it on your own
- do not refer to textbooks or notes, the Internet, etc.

If you happen not to be able to complete it before we make the answers available, then you should not look at the answers until you have attempted the exam first.

Exam Technique and Marking Scheme

You may think that an MCQ is easier than a standard exam because the correct answer is there in front of you. Actually it is often harder, for example because there are no marks at all if you get most of a question right and then make a silly mistake leading you to the wrong answer.

Rather than merely reading the question and then picking the appropriate answer, often questions will require some thought and problem-solving, e.g. carefully reading code and working out how it would run. You should be prepared to do this.

In the Marking Scheme, you will see you score 4 marks for a correct answer. You will also see you score −1 marks for an incorrect answer but you also score −1 marks for not giving any answer.

So, if you are not sure of an answer, **YOU SHOULD DEFINITELY GUESS. You should return an answer for EVERY QUESTION on the exam paper.**

However, you should aim at the very least to eliminate as many options as you can before resorting to guessing. Clearly, every option you can eliminate increases your chances of getting the correct answer. In general you should expect to have work hard to determine the correct answer.
1. Consider the following fragment of code:

```java
int temp, a = 1, b = 2;
temp = a;
b = a;
a = temp;
```

Which one of the following gives the values contained by the variables 'a' and 'b' after the above code is run?

A. a = 1 and b = 1
B. a = 1 and b = 2
C. a = 2 and b = 1
D. a = 2 and b = 2
E. a = 0 and b = 2
2. A programmer wants to write a program that generates the sequence of numbers:

1 2 4 8 16 32 64 128 256 512 1024 2048 4096 8192

The first (poor) attempt uses a method `doubleIt()`, which is intended to double the value of the variable `n`:

```java
public class twice {
    public static void main( String [] args ) {
        int n = 1;
        while (n < 10000) {
            System.out.print(n + " ");
            doubleIt();
            System.out.println();
        }
        public static void doubleIt() {
            n = n * 2;
        }
    }
}
```

The program fails even to compile. Which one of the following reasons causes this failure to compile?

A. the class name must have a capital letter 'T'
B. the variable ‘n’ is used in the `doubleIt()` method but is not available for use in that method.
C. the integer variable has not had memory allocated for it
D. a class cannot have all its methods declared as static
E. the while loop is infinite
3. Which one of the following is an illegal array declaration?

A. int [] a;
B. int [] a = new int[0];
C. int [] a = new int[10];
D. int [a] = new int[5];
E. int [] a = new int[112358];
4. Consider the following code:

```java
import javax.swing.JFrame;
import javax.swing.JButton;
import java.awt.Container;
import java.awt.FlowLayout;
import java.awt.GridLayout;
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;

public class Gooey extends JFrame implements ActionListener {

    private JButton startButton = new JButton("Start");
    private JButton stopButton = new JButton("Stop");

    public Gooey() {
        setTitle("Gooey Buttons");
        Container contents = getContentPane();
        contents.setLayout(new GridLayout(1,0) );
        contents.add(stopButton);
        stopButton.addActionListener(this);
        contents.add(startButton);
        startButton.addActionListener(this);
        setDefaultCloseOperation(EXIT_ON_CLOSE);
        pack();
    }

    public void actionPerformed(ActionEvent evt) {
        if (evt.getSource() == startButton) {
            System.out.println("Starting!");
        }
    }

    public static void main(String[] args) {
        Gooey stickygooey = new Gooey();
        stickygooey.setVisible(true);
    }
}
```
Which one of the following describes how the above program will behave?

A. It will fail to compile because an instance of `FlowLayout` should have been used instead of a `GridLayout`.

B. It will compile and run, both buttons appear, but it will give an exception when the button labelled ‘Stop’ is pressed.

C. It will compile and run, both buttons appear, and it will print ‘Starting!’ on standard output only when the button labelled ‘Start’ is pressed.

D. It will compile and run, but only the button labelled ‘Stop’ will appear.

E. It will compile and run, both buttons appear, and it will print ‘Starting!’ on standard output when either of the buttons is pressed.

5. Consider the following code fragment:

```java
int i = 1;
while (i <= 10)
    i = i + 2;
System.out.println(i);
```

Which one of the following will be printed when the above fragment is run?

A. nothing — the program will loop indefinitely

B. 9

C. 10

D. 11

E. 12
6. Consider the following method definition:

```java
private void myMethod(String test)
{
}
```

Which one of the following is TRUE of the above definition?

A. the method is static
B. the method accepts an argument of type ‘test’
C. the method returns a null pointer
D. the definition is illegal and will cause a compile error
E. the method does not return a value

7. Instances of classes are initialised via constructors. Which one of the following statements is TRUE?

A. A class can have more than one constructor, as long as they have a different number of arguments, or the arguments have different types.
B. A class can have more than one constructor, only if they each have a different number of arguments.
C. A class can have more than one constructor, but only one of them can be a void method
D. A class can have more than one constructor, as long as they all have different names.
E. A class can have more than one constructor, as long as they have the same number and types of arguments.
8. Consider the following code:

```java
public class Merry {
    public static void main(String [] args) {
        int i = 0;
        while (i < 3) {
            if( i == 0 ) System.out.print("Very");
            i++;
            if( i == 1 ) System.out.print("Happy");
            if( i == 2 ) System.out.print("Merry");
            else System.out.print("Fun!");
            i++;
        }
        System.out.println("Christmas");
    }
}
```

What one of the following is printed when the above code is executed?

A. VeryHappyMerry
B. VeryHappyFun!Christmas!
C. VeryHappyFun!Fun!Christmas!
D. HappyMerryFun!
E. VeryChristmas!

```
9. Given the following code:

```java
int x = 2, y = 3;
if (x > 0)
{
    x++;
    if (x != y);
    x = 0;
    y = 0;
}
System.out.println(x + " , " + y);
```

Which one of the following answers will be printed on standard output?

A. 0, 0  
B. 2, 3  
C. 0, 3  
D. 3, 3  
E. 2, 0

10. Consider the following program fragment:

```java
System.out.println( 1 + 2 + 3 + 4 + 5 + "-hello-" + (6 + 7 + 8 + 9) );
```

Which one of the following will be displayed when the above fragment is run?

A. 12345-hello-6789  
B. 15-hello-30  
C. 12345-hello-30  
D. 15-hello-6789  
E. 12345--6789
11. Consider the following code:

```java
public class TestArray
{
    public static void main(String [] args)
    {
        int [][] myArray = new int[3][];

        for (int i = 0; i < myArray.length; i++)
        {
            myArray[i] = new int[i + 1];
            for (int j = 0; j < myArray[i].length; j++)
            {
                myArray[i][j] = i + j;
            }
        }

        for (int i = 0; i < myArray.length; i++)
        {
            for (int j = 0; j < myArray[i].length; j++)
            {
                System.out.print(myArray[i][j] + "; ");
            }
            System.out.println();
        }
    }
}
```

Which one of the following outputs will be produced when the code is run?

A. 0; 1; 2;
   2; 3; 4;
   4; 5; 6;

B. 0;
   1; 2;
   2; 3; 4;

C. A NullPointerException will be generated

D. 0;
   2; 4;
   6; 8; 10;

E. An ArrayOutofBoundsException will be generated
12. Consider the following code:

```java
public class House
{
    private static boolean doorOpenStatus;

    public static void openDoor()
    {
        doorOpenStatus = true;
    }

    public static void main(String[] args)
    {
        House myHouse = new House();
        //call the openDoor method here:
    }
}
```

Which one of the following method calls could be used to call the `openDoor` method in the position indicated in the above code?

A. `myHouse.openDoor();`

B. `(myHouse)openDoor();`

C. `openDoor();`

D. `openDoor().House;`

E. `House.openDoor();`
13. Consider the following code:

```java
public class Muppet {
    private String name;
    private int age;

    public Muppet(String requiredName, int requiredAge) {
        name = requiredName;
        age = requiredAge;
    }

    public String getName() {
        return name;
    }

    public void setName(String newName) {
        name = newName;
    }
}
```
together with the following fragment of code:

```java
Muppet bert = new Muppet("Albert", 9);
Muppet ernie = new Muppet("Ernest", 8);

Muppet elmo = bert;

elmo.setName("Elmondo");

System.out.print(bert.getName() + ", ");
System.out.print(ernie.getName() + ", ");
System.out.println(elmo.getName());
```

Which one of the following answers will be output when the above code fragment is run?

A. Albert, Elmondo, Ernest
B. Albert, Ernest, Elmondo
C. Albert, Ernest, Ernest
D. Elmondo, Ernest, Elmondo
E. Ernest, Elmondo, Ernest
14. Consider the following code:

```java
public class Raise {
    public static void main(String [] args) {
        int [] seq = {0, 2, 4, 6, 8, 0};
        try {
            for (int x = 0; x < seq.length; x++)
                if (x % 3 != 0)
                    System.out.println(10 / seq[x] + " ");
        }
        System.out.println();
    }
}
```

Which one of the following is printed when the above code is executed?

A. 5 2 1 0
B. 5 2 1 Error: / by zero
C. 5 2 1 Error: 6
D. 5 2 1 Error: java.lang.ArithmeticException: / by zero
E. 5 2 1 java.lang.ArithmeticException: / by zero
15. Given the following code:

```java
public class Bird
{
    private static int id = 0;
    private String kind;

    public Bird(String requiredKind)
    {
        id = id + 1;
        kind = requiredKind;
    }

    public String toString()
    {
        return "Kind: " + kind + ", Id: " + id + "; ";
    }

    public static void main(String [] args)
    {
        Bird [] birds = new Bird[2];

        birds[0] = new Bird("falcon");
        birds[1] = new Bird("eagle");

        for (int i = 0; i < 2; i++)
            System.out.print(birds[i]);
        System.out.println();
    }
}
```

Which one of the following answers will be printed on standard output?

A. Kind:  falcon, Id:  0; Kind:  eagle, Id:  1;
B. Kind:  eagle, Id:  1; Kind:  eagle, Id:  2;
C. Kind:  eagle, Id:  2; Kind:  eagle, Id:  2;
D. Kind:  falcon, Id:  1; Kind:  eagle, Id:  2;
E. Kind:  falcon, Id:  2; Kind:  eagle, Id:  2;
16. Given the variables

```java
int x, y, z
boolean a, b, c
```

and the (awfully complex) condition containing no brackets

```java
x >= y || a == b && z > x || x + y * z != 43 != c
```

which of the following partially bracketed conditions has the same structure (according to Java’s precedence and associativity rules) to that given?

A. `(x >= y || a == b) && z > x || x + y * z != 43 != c`
B. `x >= y || a == b && z > x || (x + y) * z != 43 != c`
C. `x >= y || (a == b && z > x) || x + y * z != 43 != c`
D. `(x >= y || a == b && z > x || x + y * z != 43) != c`
E. `(x >= y || a) == (b && z > x || x + y * z != 43 != c)`
**WARNING**

DO NOT EVEN THINK ABOUT LOOKING at ANY of these answers, until you have completed the whole of the Mock Exam under exam conditions!!!!

Clearly, to do so would seriously reduce the benefits you would get from attempting the Mock.

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