UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY
Academic Year 2012/2013 – 1ˢᵗ Year Examination – Semester 2

IT2204 - Programming I
27ᵗʰ July, 2013
(TWO HOURS)

Important Instructions :

- The duration of the paper is **2 (two) hours**.

- The medium of instruction and questions is English.

- The paper has **45 questions** and **12 pages**.

- All questions are of the MCQ (Multiple Choice Questions) type.

- All questions should be answered.

- Each question will have 5 (five) choices with **one or more** correct answers.

- All questions will carry equal marks.

- There will be a penalty for incorrect responses to discourage guessing.

- The mark given for a question will vary from 0 (*All the incorrect choices are marked & no correct choices are marked*) to +1 (*All the correct choices are marked & no incorrect choices are marked*).

- Answers should be marked on the special answer sheet provided.

- Note that questions appear on both sides of the paper.
  If a page is not printed, please inform the supervisor immediately.

- Mark the correct choices on the question paper first and then transfer them to the given answer sheet which will be machine marked. **Please completely read and follow the instructions given on the other side of the answer sheet before you shade your correct choices.**

1) Consider the following program written in Java.

```
public class First{
public static void main(String args[]){
 System.out.println("Chamara Madushanka");
     }
}
```

Select from among the following, (a) suitable editor(s) that can be used to write the program in the windows environments.

(a) notepad	(b) vi	(c) Microsoft word
(d) Word pad	(e) Paint in windows	

2) Select from among the following, (a) possible identifier(s) that can be used in naming variable in Java.

(a) Teacher	(b) Subject	(c) Student
(d) firstName	(e) 2ndName	

3) Select from among the following, valid escape sequences used in Java.

(a) \n	(b) \t	(c) \\
(d) \"	(e) \'	

4) Consider the following two lines.

Sigiriya
Nuwaraeliya

Select from among the following, (a) valid Java statement(s) which can be used to get those lines printed.

(a) System.out.println("Sigiriya Nuwaraeliya ");
(b) System.out.println("Sigiriya Nuwaraeliya "\n);.
(c) System.out.println("Sigiriya \nNuwaraeliya ");
(d) System.out.print("Sigiriya");
    System.out.println("Nuwaraeliya ");
(e) System.out.println("Sigiriya");System.out.println("Nuwaraeliya ");

5) One has saved a Java source file giving the following file name.

Student.java

Select from among the following, the class name which has been used in the file.

(a) Student	(b) main	(c) Java
(d) String	(e) int	

6) One has saved a Java source file giving the following name.

   Customer.java

   Select from among the following, the correct option(s) that can used to create a documentation of the Customer class as web page.

(a) javadoc	(b) java	(c) javac
(d) .txt	(e) Customer.class	

7) Select from among the following, the valid option(s) which can be considered as comments in Java.

(a) //	(b) /** */	(c) /* */
(d) '	(e) "	

8) Select from among the following, valid relational operators.

(a) ==	(b) >=	(c) =<
(d) &&	(e) ++	

9) Select from among the following, (a) **<u>incorrect</u>** statement(s) related to number literals.

(a) int num1 = 'A';	(b) float num 2= 4.5;	(c) double num3= 100.8D;
(d) long num4 = 100L;	(e) short num5 = 100S;	

Consider the following program written in Java to answer questions 10 and 11.

```
public class Ex10{
public static void main(String args[]){
  System.out.println("Anuradhapura");
     }
}
```

10) Select from among the following, the valid option(s) that can be considered to prove that a Java is an Object Oriented programming language.

(a) args[]	(b) Anuradhapura	(c) class
(d) main	(e) { }	

11) Select from among the following, what can be considered as keywords in Java.

(a) args[]	(b) void	(c) class
(d) main	(e) String	

12) Select from among the following, the company where the Java language was initially developed.

(a) Oracle Company	(b) Sun Microsystems	(c) Microsoft Company
(d) Oak Company	(e) Java Company	

Use the following declarations and initializations to evaluate the Java expressions given in questions 13 - 17. Assume that each expression is evaluated separately in the program.

```
int num1 = 10,num2 = 15,num3 = 20;
char ch = 'A'; // note that the ASCII value of A is 65
```

Select from among the given options, the correct output for each of the questions 13 – 17.

13) System.out.println(num1 < num2 :"310"?"500");

(a) 310	(b) 300	(c) 500
(d) 610	(e) error	

14) System.out.println(num1 + (num2 * num3));

(a) 310	(b) 300	(c) 500
(d) 610	(e) error	

15) System.out.println("values are"+ ch + num1);

(a) values areA	(b) values areA10	(c) values are10
(d) values are75	(e) values are	

16) System.out.println(ch);

(a) A	(b) 65	(c) true
(d) A65	(e) error	

17) System.out.println(ch > num1);

(a) 65	(b) A	(c) true
(d) 75	(e) error	

Consider the following pool of Java statements to answer questions 18 – 23. Note that each statement is given a unique number as an identifier. In each question a problem is given and in order to solve that problem one has to write segments of Java programs according to the given instructions. It is not required to consider writing the class name or main method in the program. Answers for each option of questions 18 to 23 is given as a list of identifier numbers indicating the program statements.

Identifier	Java statements/Curly Brackets
1	{
2	}
3	char area = base* (height/2);
4	boolean area = base* (height/2);
5	int area = base / (height/2);
6	for(int 0 = i; i<= 3 ; i++)
7	for(int i = 0; I = 3 ; i++)
8	for(int i = 0; i<= i ; i++)
9	System.out.println(x);
10	if(i* 2==1)
11	System.out.println("i");
12	double final poundsToKg = 0.45359237;
13	System.out.println(y);
14	Switch(i)
15	double kilograms = pounds % 0.45359237;

16	`double kilograms = pounds = 0.45359237;`
17	`for(int i = 0; i<= 3 ; i++)`
18	`for(int k = i ; k<= 3 ; k++)`
19	`for(int k = 0 ; k<= 3 ; k++)`
20	`System.out.print("*  ");`
21	`System.out.println();`
22	`else if(average != 65.0)`
23	`if(average != 75.0)`
24	`double average = 67.0;`
25	`if(average >= 75.0)`
26	`System.out.println("B");`
27	`else if(average >= 65.0)`
28	`System.out.println("A");`
29	`else if(average >= 45.0)`
30	`System.out.println("C");`
31	`if(average => 75.0)`
32	`Else`
33	`else if(average => 65.0)`
34	`System.out.println("F");`
35	`else if(average => 45.0)`
36	`int area = base* (height/2);`
37	`System.out.println(area);`
38	`System.out.println("Area of Triangle is" + area);`
39	`int area = (base* height)/2;`
40	`int height = 12;`
41	`int base = 4;`
42	`System.out.println(i);`
43	`if(i%2==1)`
44	`if(i%2==0)`
45	`for(int i = 50; i <= 100 ; i++)`
46	`double kilograms = pounds * poundsToKg;`
47	`final double poundsToKg = 0.45359237;`
48	`System.out.println( "You entered: " + pounds + " pounds, which is equivalent to " +kilograms+ " kilograms.");`
49	`double kilograms = pounds * 0.45359237;`
50	`double pounds = 100;`

18) It is required to write a Java program to convert 100 pounds to kilograms considering that one pound is equal to 0.45359237 kilogram.

The **blank** space in the following Java program is to be filled with the identifiers from the table.

public class PoundsToKilo{
public static void main(String args[]){ **blank**   } }

Which of the following list(s) of identified numbers from the given Java program segments could be selected for the **blank** space?

(a) 50,49,48	(b) 47,49,16,48,12
(c) 12,50,46,48	(d) 47,50,46,48
(e) 15,46,47	

19) Write a Java program to print all the odd numbers in the number range 50 to 100 horizontally in the command prompt. One has to use the *for* control structure in writing the program and the name of the control variable is i.

The **blank** space in the following Java program is to be filled with the identifiers from the table.

public class OddNumbers{
public static void main(String args[]){ **blank** } }

Which of the following list(s) of identified numbers from the given Java program segments could be selected for the **blank** space?

(a) 45,44,42,10	(b) 45,43,42
(c) 45,1,43,42,2	(d) 45,1,44,42,2,10
(e) 45,2,44,42,1	

20) It is required to write a Java program to calculate an area of a triangle. Area of a triangle is calculated using the following expression.
Area = ½ x   b   x   h
Here b is the base of the triangle and h is the height of the triangle. Assume that the value of b is 4 and the value of h is 12.

The **blank** space in the following Java program is to be filled with the identifiers from the table.

public class AreaOfTriangle {
public static void main(String args[]){ **blank** } }

Which of the following list(s) of identified numbers from the given Java program segments could be selected for the **blank** space?

(a) 37,4,39,5,41,14	(b) 41,40,39,37
(c) 41,40,39,37,38	(d) 41,40,39,37,38
(e) 36,3,41,37,14	

21) It is required to write a Java program to evaluate the grade of a candidate using *if* statement. When the average of the candidate is given according to the following table the grade has to be evaluated.

If the average is greater than or equal to 75 the grade is A,
If the average is 74 - 65 the grade is B,
If the average is 64 - 45 the grade is C,
If the average is less than or equal to 44 the grade is evaluated as F.

The **blank** space in the following Java program is to be filled with the identifiers from the table.

class GradeEvaluation{
public static void main(String args[]){ **blank** } }

Which of the following list(s) of identified numbers from the given Java program segments could be selected for the **blank** space?

(a) 24,25,26,23,28,29,30,32,34	(b) 24,31,28,27,33,29,23,35,34
(c) 24,25,28,27,26,29,30,32,34	(d) 24,25,22,27,29,30,32,34,14
(e) 24,22,28,27,26,29,30,43,44	

22) Consider the following style below.

```
* * * *
* * * *
* * * *
* * * *
```

It is required to write a Java program to illustrate the given style using *for* control structures.
The **blank** space in the following Java program is to be filled with the identifiers in the table.

class Ex19{
public static void main(String args[]){ **blank** } }

Which of the following list(s) of identified numbers from the given Java program segments could
be selected for the **blank** space?

(a) 1,17,19,20,21,9,2	(b) 19,1,17,20,21,2
(c) 17,19,20,21,14,2	(d) 17,1,19,20,21,2
(e) 17,11,1,18,20,21,2,13	

23) Consider the following style below.

```
* * * *
* * *
* *
*
```

It is required to write a Java program to illustrate the given style using *for* control structure.
The **blank** space in the following Java program is to be filled with the identifiers in the table.

class Ex20{
public static void main(String args[]){ **blank** } }

Which of the following list(s) of identified numbers from the given Java program segments could
be selected for the **blank** space?

(a) 1,17,19,6,21,2	(b) 19,1,7,20,21,2
(c) 17,19,7,21,14	(d) 17,1,19,8,21,2
(e) 17,1,18,20,21,2	

Consider the following program written in Java to answer questions 24 and 25.

```
class What
{
 public static void main(String args[])
 {
  String s="malayalam";
  int i;
  int n=s.length();
  String str="";
  for(i=n-1;i>=0;i--)
  str=str+s.charAt(i);

 System.out.println(str);
 }
}
```

24) What would the output of the program be?

(a) malayalam	(b) mala	(c) error
(d) yalam	(e) 123456789	

25) Assume that one has changed the `String s="malayalam";` statement as follows.

```
String s="Bangkok or Nuwaraeliya";
```

What would the output of the program be?

(a) ayilearawuN ro kokgnaB	(b) `Bangkok or Nuwaraeliya`
(c) `Bangkok`	(d) kokgnaB
(e) 123456789101112131415161718192021	

26) Select from among the following, (a) valid option(s) that can be considered as packages in Java.

(a) lang	(b) applet	(c) io
(d) net	(e) awt	

27) Consider the following statement noting the word **blank**.

"Environment variables can be set by right clicking **blank** icon and then selecting the properties menu in the Windows Operating System"

Select from among the following the suitable option to substitute for the word **blank** in the above statement.

(a) Internet Explorer	(b) My Computer	(c) Recycle Bin
(d) Program Files	(e) Notepad	

28) Consider the following program written in Java.

```
public class Ex28{
public static void main(String args[]){

    int number = 1234;

     int num2 =0;

    while(number > 0){
      num2 = number % 10;
      number = number / 10;
    System.out.print(num2);
    }
  }
}
```

What would the output of the program be?

(a) 1234	(b) 4321	(c) 123
(d) 321	(e) error	

29) Consider the following program written in Java.

```java
public class Ex29{
public static void main(String args[]){
    int number = 5, i = 0;

     int num2[] = new int[8];

    while(number > 0){
      num2[i] = number % 2;
      number = number / 2;
      i++;
   }
    for(int k=i-1; k>=0 ; k--)
        System.out.print(num2[k]) ;
   }
}
```

What would the output of the program be?

(a) 5	(b) 100	(c) 101
(d) 55555555	(e) error	

30) Which of the following is the smallest Integer data type?

(a) double	(b) smallest	(c) short
(d) int	(e) byte	

31) Consider the following program written in Java.

```java
public class Ex30{
public static void main(String args[]){
    char ch = 'A';  // note that the ASCII value of A is 65
    int i = 0;
      do{
      System.out.print(ch);
      ch++;
      i++;
      }while (i<=3);
   }
}
```

What would the output of the program be?

(a) A	(b) 1234	(c) ABCD
(d) 65666768	(e) error	

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32) Consider the following program written in Java.

```java
public class Ex30{
public static void main(String args[]){
    char ch = 'A';   // note that the ASCII value of A is 65
    int i = 0;
    int values[] = new int[8];
   do{
      values[i] = ch;
      System.out.print(values[i]);
      ch++;
      i++;
      }while (i<=3);
  }
}
```

What would the output of the program be?

(a) A	(b) 1234	(c) ABCD
(d) 65666768	(e) error	

33) Consider the following program written in Java.

```java
public class Ex31{
public static void main(String args[]){
    int array[]={2,4,6,8};

    for(int i : array[i])
        System.out.print(i);
  }
}
```

What would the output of the program be?

(a) 2468	(b) 8462	(c) 24
(d) 1234	(e) error	

Consider the following program written in Java to answer questions 34 - 41.

```java
class Student{
   private String name;
   private int age;
   public static String city;

   Student(){ }

   Student(int a){age = a;}
   public void setName(String n){ name = n;}
   public String getName(){return name;}

   private int getAge(){return age;}

   public void setCity(String c){city = c;}
   public String getCity(){ return city;}
}
```

34) When considering the features of object orientation, which feature(s) is/are shown clearly in the program?

(a) Abstraction	(b) Encapsulation	(c) Data hiding
(d) Inheritance	(e) Polymorphism	

35) Assume that the following program is also going to be written in the same notepad where the Student class also has been written.

public class DriverProgram{
public static void main(String args[]){   }}

Select from among the following, a suitable file name to save the notepad.

(a) Student	(b) DriverProgram	(c) main
(d) MySchool	(e) String	

36) Select from among the following, (a) variable(s) that can be considered as (an) instance variable(s).

(a) name	(b) getName	(c) age
(d) city	(e) setName	

37) Select from among the following, (a) variable(s) that can be considered as (a) class variable(s).

(a) name	(b) getName	(c) age
(d) city	(e) setName	

38) Select from among the following, (a) method(s) which can be considered as (a) constructor(s).

(a) `Student(){ }`	(b) `public void setCity(String c){city = c;}`
(c) `private int getAge(){return age;}`	(d) `Student(int a){age = a;}`
(e) `public void setName(String n){ name = n;}`	

39) Assume that one has written the following statements within the main method in the DriverProgram class.

```
Student obj1 = new Student();
obj1.setName("Chamara Madushanka");
System.out.print(obj1.name);
```

What would the output of the program be?

(a) chamara madushanka	(b) obj1.name	(c) Student
(d) Obj1	(e) error	

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40) Assume that one has written the following statements within the main method in the DriverProgram class. Now one can see only these statements within the main method.

```
Student obj1 = new Student(25);  System.out.print(obj1.getAge());
```

What would the output of the program be?

(a) 25	(b) 0	(c) `obj1.getAge()`
(d) obj	(e) error	

41) Assume that one has again written the following statements within the main method in the DriverProgram class. Now one can see only these statements within the main method.

```
Student obj1 = new Student(25);
obj1.setCity("Maharagama");   System.out.print(Student.city);
```

What would the output of the program be?

(a) 25	(b) Maharagama	(c) Student.city
(d) Obj1	(e) error	

42) Select from among the following, valid types of exceptions that can be seen in Java.

(a) Checked	(b) Run time	(c) Unchecked
(d) Design time	(e) Compile time	

43) Consider the following program written in Java.

```
public class Ex42{
public static void main(String args[]){
      int a=8;  System.out.println(a/0);
   }
}
```

What would the output of the program be?

(a) NullPointerException	(b) IOException
(c) ArrayoutofboundException	(d) ArithmeticException
(e) NumberFormatException	

44) Select from among the following the package in which the majority types that make up the collection framework are defined.

(a) applet	(b) net	(c) swingx
(d) awt	(e) util	

45) The notations used for algorithm specification must conform to a specific set of criteria. Select from among the following, the valid option(s) that can be considered as criteria for algorithm specifications.

(a) It must be concise.
(b) It must be unambiguous
(c) It must be capable of machine execution.
(d) It must promote elegance in the solution.
(e) It must be dependent on Java programming language.

****