



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY  
Academic Year 2009 /2010 – 1<sup>st</sup> Year Examination – Semester 2

***IT2204 - Programming I***  
***07<sup>th</sup> August, 2010***  
***(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 **13 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) Select from among the following, the correct options which can be considered as packages that come under the Java standard library.

(a) java.lang	(b) java.io	(c) java.util
(d) java.awt	(e) java.swing	

- 2) Consider the following name which is appearing in the home directory of a windows environment.

jdk1.5.0\_01

Select from among the following, the release version number which can be seen in the above directory name.

(a) jdk	(b) 1	(c) 5
(d) 0	(e) 01	

- 3) Select from among the following, the file name/s which can be qualified as (a) Java source file(s).

(a) class.java	(b) Customer.java	(c) Customer.class
(d) Employee.java	(e) Employee.class	

- 4) Which of the following options is/are correct on valid statements in Java?

(a) for( x>34 ; int a ; a++);	(b) float newValue = 35.5;
(c) int value = value + 1;	(d) String myFriend = "Vimukthi";
(e) import java.applet.*;	

- 5) Select from among the following, what can be considered as key words available in Java.

(a) enum	(b) return	(c) case
(d) args	(e) int	

- 6) Consider the following statement.

"A programmer needs to avoid the execution of some codes from the program."

Select from among the following, the correct operator(s) which is/are valid in Java to achieve the wish of the programmer.

(a) //	(b) %	(c) \$
(d) if	(e) /* /**	

**Use the following declarations and initializations to evaluate the Java expressions given in questions 7 - 11. Assume that each expression is evaluated separately in the program.**

```
long x = 10, y = 15, z = 20;
int m = 0;
short k = 10;
char ch = 'B' // note that the ASCII value of B is 66
```

7) `System.out.println(m = x);`

- |           |           |          |
|-----------|-----------|----------|
| (a) false | (b) 10    | (c) 10.0 |
| (d) 100   | (e) error |          |

8) `System.out.println(k = k * 100);`

- |          |           |         |
|----------|-----------|---------|
| (a) 10   | (b) 1     | (c) 100 |
| (d) 1000 | (e) error |         |

9) `System.out.println(m = ch);`

- |        |           |        |
|--------|-----------|--------|
| (a) ch | (b) m     | (c) 66 |
| (d) B  | (e) error |        |

10) `System.out.println(x = y % z);`

- |        |           |        |
|--------|-----------|--------|
| (a) 10 | (b) 15    | (c) 20 |
| (d) 0  | (e) error |        |

11) `System.out.println( z = k + ch );`

- |        |           |        |
|--------|-----------|--------|
| (a) 66 | (b) 10    | (c) 76 |
| (d) 8  | (e) error |        |

**Consider the following program written in Java to answer questions 12 – 20.**

```
class A{
    private int var1;
    private float value1 = 34.5f;
    private static value2;

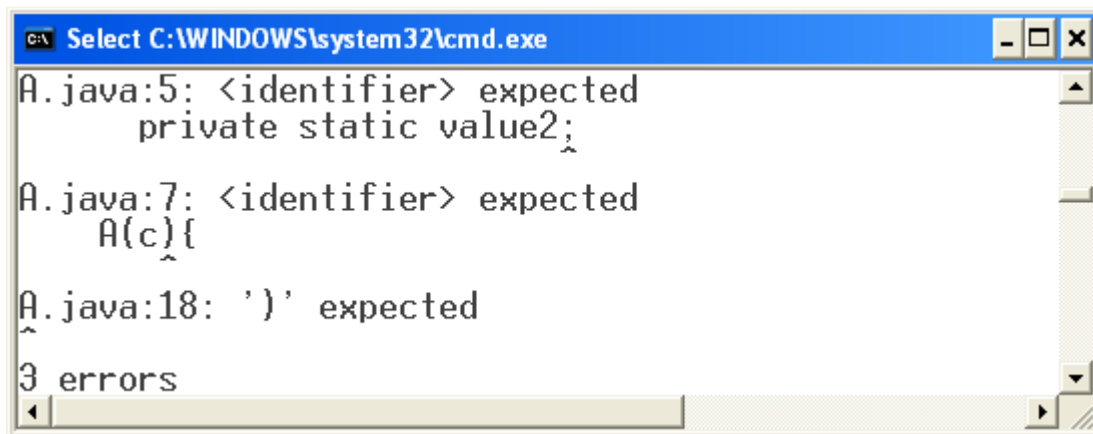
    A(c){
        value2 = c;
    }

    public int setVar1(int x){
        x = var1;
    }

    public void getVar1(){
        return var1;
    }

}
```

- 12) When the program was compiling, errors were generated showing the following messages in the command prompt.



```
C:\ Select C:\WINDOWS\system32\cmd.exe
A.java:5: <identifier> expected
    private static value2;
A.java:7: <identifier> expected
    A(c){
A.java:18: '}' expected
3 errors
```

Select from among the following, the programming statement/s which could be the cause/s for the error generated indicated as the error number 5.

- |                       |                                   |
|-----------------------|-----------------------------------|
| (a) return var1;      | (b) private float value1 = 34.5f; |
| (c) A(c)              | (d) private static value2;        |
| (e) private int var1; |                                   |

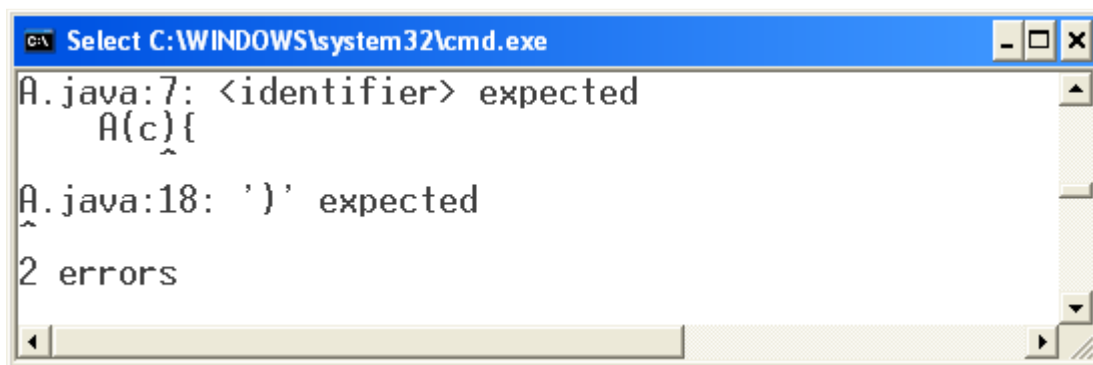
- 13) In order to correct the error generated, statements in the program can be replaced with new statements as shown in the following table.

Row number	Existing statement	New statement
1	return var1;	System.out.println(value2);
2	private float value1 = 34.5f;	private float value1;
3	A(c)	A(int a)
4	private static value2;	private static long value2;
5	private int var1;	public int var1;

Select from among the following, the correct row number/s which is/are suitable for eliminating the error.

- |            |                  |
|------------|------------------|
| (a) 1 only | (b) 2 and 3 only |
| (c) 3 only | (d) 4 only       |
| (e) 5 only |                  |

- 14) After successfully correcting the error in question number 12, the program was compiled again. The following message was displayed in the command prompt.



```
C:\ Select C:\WINDOWS\system32\cmd.exe
A.java:7: <identifier> expected
    A(c){
      ^
A.java:18: \')\' expected
^
2 errors
```

Select from among the following, the programming statement/s which could be the cause/s for the error generated.

- |                       |                                   |
|-----------------------|-----------------------------------|
| (a) return var1;      | (b) private float value1 = 34.5f; |
| (c) A(c)              | (d) private static value2;        |
| (e) private int var1; |                                   |

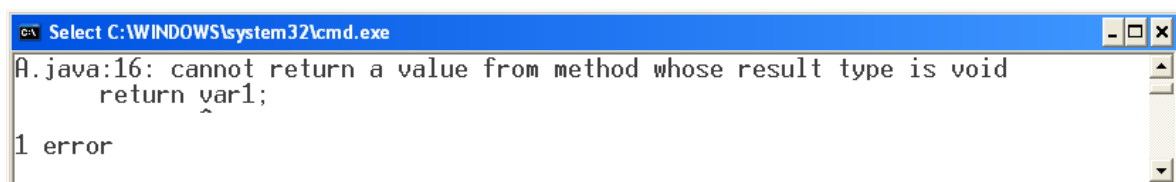
- 15) In order to correct the error generated in the question number 14, statements in the program can be replaced with new statements as shown in the following table.

Row number	Existing statement	New statement
1	return var1;	System.out.println(value2);
2	private float value1 = 34.5f;	private float value1;
3	A(c)	A(int a)
4	private static value2;	private static long value2;
5	private int var1;	public int var1;

Select from among the following, the correct row number/s which is/are suitable for eliminating the error.

- |            |                  |            |
|------------|------------------|------------|
| (a) 1 only | (b) 2 only       | (c) 3 only |
| (d) 4 only | (e) 4 and 5 only |            |

- 16) After correcting the erroneous code traced in question number 15, the program was compiled again. The following message was displayed in the command prompt showing an error.



```
C:\ Select C:\WINDOWS\system32\cmd.exe
A.java:16: cannot return a value from method whose result type is void
    return var1;
           ^
1 error
```

Select from among the following, the programming statement/s which could be the cause/s for the error generated indicated as the error number 16.

- |                       |                               |
|-----------------------|-------------------------------|
| (a) return var1;      | (b) public int setVar1(int x) |
| (c) A(c)              | (d) x = var1;                 |
| (e) private int var1; |                               |

- 17) In order to correct the error generated in question number 16, statements in the program can be replaced with new statements as shown in the following table.

Row number	Existing statement	New statement
1	return var1;	System.out.println(value2);
2	public int setVar1(int x)	public void setVar1(int x)
3	A(c)	A(int a)
4	x = var1;	x = int var;
5	private int var1;	public int var1;

Select from among the following, the correct row number/s which is/are suitable for eliminating the error.

- |            |                  |            |
|------------|------------------|------------|
| (a) 1 only | (b) 2 and 3 only | (c) 3 only |
| (d) 4 only | (e) 4 and 5 only |            |

- 18) After correcting the erroneous code traced in question number 17, the program was compiled again. The following message was displayed again in the command prompt indicating an error.

```

C:\WINDOWS\system32\cmd.exe
A.java:13: missing return statement
    }
1 error
  
```

Select from among the following, the programming statement/s which could be the cause/s for the error generated.

- |                       |                               |
|-----------------------|-------------------------------|
| (a) return var1;      | (b) public int setVar1(int x) |
| (c) A(c)              | (d) x = var1;                 |
| (e) private int var1; |                               |

- 19) In order to correct the error generated in question number 18, statements in the program can be replaced with new statements as shown in the following table.

Row number	Existing statement	New statement
1	return var1;	System.out.println(value2);
2	public int setVar1(int x)	public void setVar1(int x)
3	A(c)	A(int a)
4	x = var1;	x = int var;
5	private int var1;	public int var1;

Select from among the following, the correct row number/s which is/are suitable for eliminating the error.

- |            |                  |                  |
|------------|------------------|------------------|
| (a) 1 only | (b) 2 only       | (c) 2 and 3 only |
| (d) 4 only | (e) 4 and 5 only |                  |

- 20) After debugging the erroneous situation in question number 19, the program was compiled successfully. But still, one can see a problematic code in the program which can affect the proper execution of the program. Consider the following situation regarding the existing statement and the new statement.

Row number	Existing statement	New statement
1	return var1;	System.out.println(value2);
2	public int setVar1(int x)	public void setVar1()
3	A(c)	A(int a)
4	x = var1;	var1 = x;
5	private int var1;	public int var1;

Select from among the following, the correct row number/s which is/are suitable for eliminating the error.

- |            |                  |                  |
|------------|------------------|------------------|
| (a) 1 only | (b) 2 only       | (c) 2 and 3 only |
| (d) 4 only | (e) 4 and 5 only |                  |

- 21) Select from among the following, the valid array declarations that are allowed in Java.

- |                            |                            |
|----------------------------|----------------------------|
| (a) int ar[] = new ar[];   | (b) int[] ar = new int[7]; |
| (c) int ar = new int[85];  | (d) int ar[] = new int[];  |
| (e) int ar[45] = new ar[]; |                            |

- 22) Consider the following program written in Java.

```
public class ProblemOne{
    public static void main(String args[]){
        char ar[][] = {{ 'v', 'a', 'b', 'c' },
                       { 'x', 'i', 'j', 'k' },
                       { 'z', 'x', 'm', 'y' },
                       { 'l', 'm', 'n', 'u' } };

        for(int x=0 ; x<ar.length ; x++){
            for(int y=x ; y<x+1 ; y++)
                System.out.print(ar[x][y]);
        }
    }
}
```

What would the output be when the program is executed?

- |          |          |          |
|----------|----------|----------|
| (a) vabc | (b) vimu | (c) cjxl |
| (d) lmnu | (e) ckyu |          |

Use the following declarations and initializations to evaluate the Java expressions given in questions 23 - 24. Assume that each expression is evaluated separately in the program.

```
byte a = 10;  
float y = 5.0f;  
int m = 55;
```

23) System.out.println(a \* m % y);

- |          |         |           |
|----------|---------|-----------|
| (a) 10   | (b) 5.0 | (c) error |
| (d) 50.0 | (e) 0.0 |           |

24) System.out.println(a>m && y==a/0 ? a\*a : y);

- |           |           |         |
|-----------|-----------|---------|
| (a) false | (b) 100   | (c) 5.0 |
| (d) true  | (e) error |         |

25) Consider the following segment of a Java program.

```
int year = 2004;  
if((year % 400 == 0) || (year % 4 == 0) && (year % 100 != 0))  
  
    System.out.println( year + " is a leap year");  
  
else  
  
    System.out.println( year + " is not a leap year");
```

What would be the intended output of the program?

- |                              |                                  |
|------------------------------|----------------------------------|
| (a) year + " is a leap year" | (b) year + " is not a leap year" |
| (c) 2004 + " is a leap year" | (d) 2004 is a leap year          |
| (e) 2004 is not a leap year  |                                  |

26) Consider the following segment of a Java program.

```
int ar[] = new int[]{1,2,3,4,5};  
for(int i=0; i < ar.length ; i++){  
  
    if(ar[i] == 3)  
  
        break;  
  
    else  
  
        System.out.print(ar[i]);
```

What would be the intended output of the program?

- |          |         |           |
|----------|---------|-----------|
| (a) 1245 | (b) 345 | (c) error |
| (d) 12   | (e) 15  |           |



27) Consider the following segment of a program written in Java.

```
int num1 = 10;
int num2 = 20;

System.out.print(num1+" "+num2+" ");

num1 = num1 + num2;

num2 = num1 - num2;

num1 = num1 - num2;

System.out.println(num1+" "+num2);
```

What would be the output of the program if it is executed successfully?

- |                 |                 |                 |
|-----------------|-----------------|-----------------|
| (a) 10 10 10 10 | (b) 10 20 10 20 | (c) 10 20 20 10 |
| (d) 10 10 20 20 | (e) 20 20 20 20 |                 |

28) Consider the following program written in Java.

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

        int value = -1;
        do {
            if (value == -1){
                System.out.print("Vimukthi ");
                value++;
            }
            else {
                System.out.print("Jayaweera");
                System.out.print(" ");
                value--;
            }
            value += 2;
        } while (value < 3);
    }
}
```

What would be the output of the program?

- |                                |                                   |
|--------------------------------|-----------------------------------|
| (a) Vimukthi Vimukthi Vimukthi | (b) Jayaweera Jayaweera Jayaweera |
| (c) Vimukthi Jayaweera         | (d) Vimukthi                      |
| (e) Jayaweera Vimukthi         |                                   |

- 29) Consider the following program written in Java.

```
class WhileDemo {
    public static void main(String[] args){
        int count = 5;
        while (count > 3) {
            System.out.print(count);
            count--;
        }
    }
}
```

What would be the output of the program?

- |           |           |        |
|-----------|-----------|--------|
| (a) 12345 | (b) 54321 | (c) 12 |
| (d) 54    | (e) 123   |        |

Consider the following program written in Java to answer questions 30 – 32,

```
public class Switch{
public static void main(String args[]){
    int number = 4;
    switch(number < 7){
        case 1 : System.out.println("One");
        case 2-5: System.out.println("between two and five");
        case 6 : System.out.println("Six");
    }
}
}
```

- 30) Select from among the following, statement/s which can be seen in the program that can be considered as **not** valid in Java.

- |   |   |
|---|---|
| (a) public class Switch                                   | (b) switch(number < 7)                  |
| (c) case 2-5: System.out.println("between two and five"); | (d) case 6 : System.out.println("Six"); |
| (e) case 1 : System.out.println("One");                   |   |

- 31) Select from among the following, the key words which **cannot** be seen in the program but required for the completeness of it.

- |           |            |             |
|-----------|------------|-------------|
| (a) catch | (b) return | (c) default |
| (d) while | (e) break  |             |

- 32) When the above program was compiled, some errors were reported in the command prompt. Select from among the following, the cause/s for those errors generated. They were generated due to

- |  |   |
|--|---|
| (a) missing <i>catch</i> key word.         | (b) missing <i>while</i> key word.            |
| (c) the <i>case 2-5</i> : programming code | (d) the <i>public class Switch</i> statement. |
| (e) the <i>switch(number &lt; 7)</i> code  |   |

- 33) Select from among the following, the correct option/s that can be considered as common characteristics of sub routines and functions.

- |   |
|---|
| (a) They are invoked by stating their names together with any required parameters.<br>(b) Sub routines and functions may call themselves.<br>(c) They may themselves call other sub-procedures, but may not call the main procedure.<br>(d) Once they are called, their results are communicated as global data or passed parameters.<br>(e) When they are invoked, the program control passes to the called sub procedure and resumes at the first executable statement in that procedure. |
|---|

- 34) There are some guiding principles introduced for decomposition of a program into sub procedures and eliminating duplication of codes is one such a principle. Select from among the following, the correct statement/s which describe/s the need of eliminating duplication of codes.

- |   |
|---|
| (a) It provides the ability for original programmer or others who follow him to be able to understand the nature of the program<br>(b) No task should be coded in more than one place in any program.<br>(c) Divide the project into small self-contained procedures and allocate procedures among the programmers to develop.<br>(d) After decomposition each procedure should perform one and only one task.<br>(e) Process which has already been coded and known to work correctly in one program can be copied into another program which requires the same functionality. |
|---|

- 35) Consider the following statement noting the blank space.

\_\_\_\_\_ is a program design tool which approximates the format of a programming language and is therefore easier to be translated into a program.

Select from among the following, the correct option which can be used to fill the blank.

- |  |   |
|--|---|
| (a) Nassi-Shneiderman diagram<br>(c) Pseudocode<br>(e) Structures Design | (b) Flow charts<br>(d) Object Oriented Design |
|--|---|

- 36) Select from among the following, the package in which most of the types that make up the collection framework are stored.

- |                               |                               |               |
|-------------------------------|-------------------------------|---------------|
| (a) java.lang<br>(d) java.awt | (b) java.net<br>(e) java.math | (c) java.util |
|-------------------------------|-------------------------------|---------------|

- 37) Consider the following programming statements written in Java.

```
String str1="Vimukthi";  
String str2+=" likes playing wrestling";
```

What would be the content inside the variable str2?

- |  |  |
|--|--|
| (a) Vimukthi<br>(c) Vimukthi likes playing wrestling<br>(e) likes playing Vimukthi wrestling | (b) likes playing wrestling<br>(d) error |
|--|--|

38) Consider the following program written in Java.

```
class Str{
public static void main(String args[]){
    double value1 = 10000;
    float value2 = 35.0f;
    String str = String.valueOf(value1);
    System.out.println(str + value2);
}
}
```

What would be the output of the program?

- |             |                 |          |
|-------------|-----------------|----------|
| (a) error   | (b) 10000       | (c) 35.0 |
| (d) 10035.0 | (e) 10000.035.0 |          |

39) Consider the following program written in Java.

```
class Abc{
    public static void main(String args[]){
        String str1 = "Anuradhapura";
        String str2 = "Anuradhapura";
        System.out.print(str1.equals(str2));
    }
}
```

What would be the output of the program?

- |                  |           |          |
|------------------|-----------|----------|
| (a) error        | (b) false | (c) true |
| (d) Anuradhapura | (e) Anu   |          |

40) Consider the following program written in Java.

```
class Compare{
public static void main(String args[]){
    String str1 = "Sigiriya";
    String str2 = "Jaffna";
    System.out.print(str1.compareTo(str2));
}
}
```

What would be the output of the program?

- |          |              |           |
|----------|--------------|-----------|
| (a) true | (b) false    | (c) error |
| (d) 9    | (e) Sigiriya |           |

41) Select from among the following, key words which have a direct relationship with the object oriented concept called data hiding.

- |             |               |            |
|-------------|---------------|------------|
| (a) private | (b) protected | (c) public |
| (d) default | (e) main      |            |

42) Select from among the following, the stream type/s which is/are supported by the java.io package.

- |               |              |            |
|---------------|--------------|------------|
| (a) logical   | (b) binary   | (c) output |
| (d) character | (e) physical |            |

- 43) `FilterInputStream` class has nine direct subclasses that provide more specialized ways of transforming data from an input stream. The following statement gives a description to one such class inherited from the class `FilterInputStream`.

“It reads data of primitive types from a binary stream.”

Select from among the following, the correct subclass which matches with the above description.

- |                                      |                                    |
|--------------------------------------|------------------------------------|
| (a) <code>BufferedInputStream</code> | (b) <code>DataInputStream</code>   |
| (c) <code>CheckedInputStream</code>  | (d) <code>CipherInputStream</code> |
| (e) <code>DigestInputStream</code>   |                                    |

- 44) Select from among the following, different items of information that can be expected from an object of type *throwable* class about an exception.

- |   |
|---|
| (a) A message which has been initialized by a constructor denoting the exception              |
| (b) A way to clean up garbage generated at the end of executing a <i>try</i> block            |
| (c) A record for the execution stack at the time the object was created                       |
| (d) A message informing a standard exception after rethrowing and object of type <i>throw</i> |
| (e) A message informing a wrong usage of an input device                                      |

- 45) Consider the following message which can be expected in the command prompt when a program statement is executed.

```
Exception in thread "main" java.lang.StringIndexOutOfBoundsException:
String index out of range: 22
```

Select from among the following, the programming statements which can be cause the generator of such a message in the command prompt.

- |  |  |
|--|--|
| (a) <code>String str1 = "University of Colombo";</code><br><code>String str2 = str1.substring(20,22);</code> | (b) <code>for(int i=0;i&lt;ar.length;i++)</code><br><code>int sum+=ar[i];</code> |
| (c) <code>int value = num3 / 0;</code>   | (d) <code>System.out.println(" My number " + no);</code>                         |
| (e) <code>float value = 34.99;</code>  |  |

\*\*\*\*\*