



UNIVERSITY OF COLOMBO, SRI LANKA  
UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)  
Academic Year 2005/2006 – 1<sup>st</sup> Year Examination – Semester 1

### ***IT1202: Fundamentals of Programming***

***4<sup>th</sup> March 2006  
(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 -1 (*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 what Java can do?

- (a) Object oriented applications can be developed.
- (b) Networking applications can be developed.
- (c) Database applications can be developed.
- (d) GUI driven applications can be developed.
- (e) Dynamic web-based applications can be developed.

2) In addition to JDK there are a number of Java commercial development tools available for Java programmers. Select from among the following such Java commercial development tools available.

- (a) Borland JBuilder
- (b) Visual Basic.net
- (c) Java Server Pages
- (d) Sunsoft Java workshop
- (e) Java Script

3) Consider the following program written in Java.

```
class MyClass{  
public static void main(String[] args)  
{  
    System.out.println("Physical/Bio Science Batch - 2004\n");  
}  
}
```

Select from among the following key words/reserve words available in Java which have been used in the program.

- |             |          |
|-------------|----------|
| (a) MyClass | (b) args |
| (c) class   | (d) void |
| (e) static  |          |

4) Select from among the following valid literals in Java.

- |           |             |              |
|-----------|-------------|--------------|
| (a) false | (b) 'A'     | (c) "public" |
| (d) 21.0f | (e) private |              |

5) Which of the following is a/ (are) correct statement(s) in connection with Java?

- (a) JDK 1.5 is now a valid JDK version.
- (b) Java programs cannot be run on Linux.
- (c) Java has inherited its features from C/C++ programming languages.
- (d) Java source files cannot be coded using text editors.
- (e) Java Runtime Environment (JRE) is not essential to run Java programs.

6) Which of the following statement/s is/are incorrect about the comments used in Java?

- (a) Comments are used to preserve the readability of a Java program.
- (b) // notation is used for multiline comments.
- (c) Comments are ignored by the Java compiler.
- (d) Documentation comments occur within /\* and \*/ notations.
- (e) Documentation comments could be written only in a single line.

- 7) Select from among the following the correct variable names which are accepted in Java.

(a) %OfPopulation	(b) _Value1	(c) 3Semester
(d) \$ForTsunami	(e) =Symbols	

**Use the following declarations and initializations to evaluate the Java expressions given in questions 8 -12. Assume that each expression is evaluated separately in the program.**

```
int var1=2, var2=9, var3=22;
```

- 8) System.out.println(var1 + var2 % var2);

(a) 9	(b) 0	(c) 7
(d) 2	(e) 11	

- 9) System.out.println(var1++ + --var2 + var3++);

(a) 31	(b) 32	(c) 33
(d) 13	(e) 15	

- 10) System.out.println(var1=var1++);

(a) 3	(b) 2	(c) 4
(d) error	(e) 2=3	

- 11) System.out.println(var1 + var3);

(a) 23	(b) 24	(c) 25
(d) 222	(e) 2	

- 12) System.out.println("Result is =" + var1 + var3);

(a) Result is =23	(b) Result is =24	(c) Result is =25
(d) Result is =222	(e) Result is =2	

- 13) Consider the following two statements written in Java.

```
int x=4,y=6,z=7; System.out.println(x == y & x != z);
```

Identify the operators which have been used in the above statements.

(a) assignment	(b) comparison	(c) not equal
(d) bitwise AND	(e) logical AND	

- 14) One can find the following four files in a folder called *JavaWorks*.

A. Hello.java B. Hello.byte C. Hello.class D. Hello.exe

Select the statement(s) which can be true on the above files.

(a) Hello.byte is the compiled byte code file of Hello.java.
(b) Hello.class is a Java byte code file.
(c) Hello.exe file is the compiled byte code file of Hello.java.
(d) Hello.java is a Java source file.
(e) Hello.class file contains the source code of the class Hello.

15) Which of the following command(s) give(s) the installed Java version of a computer?

- |                   |                  |                   |
|-------------------|------------------|-------------------|
| (a) version java  | (b) java.version | (c) java -version |
| (d) javac version | (e) java -v      |                   |

16) Variable declaration must include the type of information being stored and that type can be any of the following:

- |                                 |                            |
|---------------------------------|----------------------------|
| (a) One of the basic data types | (b) An array               |
| (c) One of the operators        | (d) A name of an interface |
| (e) A name of a class           |                            |

17) Select from among the following, integer number types with their correct sizes.

- |                    |                      |
|--------------------|----------------------|
| (a) int → 32 bits  | (b) double → 64 bits |
| (c) long → 32 bits | (d) short → 16 bits  |
| (e) byte → 8 bits  |                      |

18) Select from among the following character escape codes which are not available in Java.

- |        |        |        |
|--------|--------|--------|
| (a) \t | (b) \r | (c) \a |
| (d) \\ | (e) \v |        |

19) Consider the following method, which is intended to increment a given value varX by an amount of varD.

```
public int increment(int varX, int varD) {  
    ----- }  
}
```

Which of the following would fill the blank to give the intended output?

- |                                      |                                |
|--------------------------------------|--------------------------------|
| (a) varX = varX + varD; return varD; | (b) varX += varD; return varX; |
| (c) return varX++varD;               | (d) return varX == varD;       |
| (e) return varX + varD;              |                                |

20) Consider the following variable declarations.

```
int a, b; String str;
```

Assume that at some point of the program, the variables a and b contain the values 5 and 7.

Select from among the following the correct option(s) which assign(s) the variable str with the value “The sum of 5 + 7 = 12”?

- |  |
|--|
| (a) str = “The sum of a + b = a + b”;                      |
| (b) str = “The sum of “ + a + ” + “ + b + ” = “ + a + b”;  |
| (c) str = “The sum of ” + a + ” + ” + b + ” = ” + (a + b); |
| (d) str = “The sum of a + b = “ + (a + b);                 |
| (e) str = “The sum of a + b = (a + b)”;                    |

21) Which of the following is a/(are) correct variable declaration(s) and initialization(s)?

- |  |   |
|--|---|
| (a) int i = 5; float f = 1.1; long l = 100;      | (b) int i = 0x2f; float f = 1.1f; long l = 100; |
| (c) int i = 0122; float f = 1.1f; long l = 100L; | (d) int i = 1f; float f = 0x2f; long l = 100L;  |
| (e) int i = 0x2f; float f = 1.1f; long l = 100L  |   |

22) Consider the following requirement.

A user is required to enter the username and password in the login form of a program. Then the program will check whether the username is not empty (null), has at least 5 characters and the password is also not empty (null).

Which of the following will check the above conditions in a Java?

- |   |
|---|
| (a) username != null AND username.length > 4 AND password != null |
| (b) username ! null AND username.length > 4 AND password ! null   |
| (c) username ! null    username.length > 4    password ! null     |
| (d) username ! null & username.length > 4 & password ! null       |
| (e) username != null && username.length > 4 && password != null   |

23) Consider the following Java method.

```
public boolean isEmpty(int i)
{
    if (i == 0)
        return true;
    else
        return false;
}
```

Select from among the following, which will implement the same method in (a) different way(s)?

- |   |  |
|---|--|
| (a) public Boolean isEmpty(int i) {     return (i == 0)? false: true; } | (b) public Boolean isEmpty(int i) {     if (i == 0)         return true;     return false; } |
| (c) public Boolean isEmpty(int i) {     return (i == 0)? true: false; } | (d) public Boolean isEmpty(int i) {     return (i != 0); }                                   |
| (e) public Boolean isEmpty(int i) {     return (i == 0); }              |  |

- 24) The following formula converts a measurement in degrees Fahrenheit to Celsius.

$$\text{Celsius} = (\text{Fahrenheit} - 32) * (5 / 9)$$

Which of the following would effect the conversion?

- (a) `static double fahrenheit2Celsius( double degsF ) {  
double degsC;  
degsC = ( degsF - 32 ) * (5.0/9.0);  
return degsC; }`

(b) `static double fahrenheit2Celsius( double degsF ) {  
degsC = ( degsF - 32 ) * (5.0/9.0);  
return degsC; }`

(c) `static double fahrenheit2Celsius( double degsF ) {  
double degsC;  
degsF = ( degsC - 32 ) * (5.0/9.0);  
return degsF; }`

(d) `static double fahrenheit2Celsius( double degsF ) {  
double degsC;  
degsC = ( degsF - 32 ) * (5/9);  
return degsC; }`

(e) `final static int fahrenheit2Celsius( double degsF ) {  
double degsC;  
degsC = ( degsF - 32 * 5/9);  
return degsC; }`

- 25) Consider the following variable declarations.

`int i=2 ,j=5 ,a ,b;`

Which of the following will swap the values contained in the two variables i and j?

- |                                       |                                       |  |
|---------------------------------------|---------------------------------------|--|
| (a) <code>i = j; j = i;</code>        | (b) <code>i = a; a = j; j = i;</code> | (c) <code>a = i; b = j; j = a; i = b;</code> |
| (d) <code>a = i; i = j; j = a;</code> | (e) <code>a = i; j = a; i = j;</code> |  |

- 26) Which of the following operator/s is/are having lower precedence than the (+) addition operator?

- |                             |                                   |                     |
|-----------------------------|-----------------------------------|---------------------|
| (a) <code>instanceof</code> | (b) <code>&gt;&gt;&gt;&gt;</code> | (c) <code>[]</code> |
| (d) <code>? :</code>        | (e) <code>!=</code>               |                     |

- 27) Select from among the following the correct statements on the *final* modifier.

- (a) A final modifier is not used with packages.

(b) A final class cannot be sub classed.

(c) `final name="Anjalee Iddamal goda";` is a correct variable declaration statement.

(d) A final method can be overridden by its immediate subclasses.

(e) A final variable can be changed in value.

28) Which of the following switch statement(s) is/are correct or legal?

- |  |   |
|--|---|
| (a) char c = 'Y';<br>switch (c) {<br>case 'Y': System.out.println("Yes"); break;<br>case 'N': System.out.println("No"); break;<br>default: System.out.println("Try Again");<br>} | (b) String s = "Yes";<br>switch (s) {<br>case "Yes": System.out.println("Yes");<br>break;<br>case "No": System.out.println("No");<br>break;<br>default: System.out.println("Try Again");} |
| (c) int i = 3;<br>switch (i) {<br>case 1:<br>case 2: System.out.println("Ok"); break;<br>default: System.out.println("Try Again");<br>}  | (d) int i = 2;<br>switch (i) {<br>case 1: System.out.println("Yes"); break;<br>case 2: System.out.println("No"); break;<br>default: System.out.println("0");<br>}                         |
| (e) int i = 3;<br>switch (i-1) {<br>case 1: System.out.println("Yes"); break;<br>case 2: System.out.println("No"); break;<br>}   |   |

29) Consider the following Java method.

```
static boolean methodX(char[] c) {  
    for (int i = 1; i < c.length; i++) {  
        if (c[i] == 'X' && c[i - 1] == 'X') {  
            return true;  
        }  
    }  
    return false;  
}
```

Select the correct statement(s) from among the following, which describe the purpose of the above method.

- |   |
|---|
| (a) Counts number of 'X' characters in a given array<br>(b) Returns true if the array contains 'X' characters<br>(c) Returns false if there are no 'X' characters in a given array<br>(d) Returns true if the array contains two consecutive 'X' characters<br>(e) Returns true if the array is having exactly two 'X' characters |
|---|

30) Consider the following segment of a Java program.

```
for (int i = 0, j = 0; i < 5; i++, j = i * i) {  
    System.out.print(i+j);  
}
```

What will the output be when the above segment is executed as a program?

- |             |           |           |
|-------------|-----------|-----------|
| (a) 0261220 | (b) 00000 | (c) 01234 |
| (d) 161220  | (e) error |           |

31) Consider the following Java program.

```
public class HelloWorld {
    public static void main(String[] args) {
        int i = 1;
        while (i < 10) {
            for (int j = i; j < 10; j++) {
                if (j%2 == 0 || j%3 == 0)
                    continue;
                else if (j%5 == 0)
                    break;
                System.out.print(j);
            }
            i++;
        }
    }
}
```

What will the output be when the above program is executed?

- |  |              |
|--|--------------|
| (a) 12345678923456789345678945678956789567896789789899 | (b) 17       |
| (c) 177  | (d) 17777777 |
| (e) 123456789  |              |

32) Consider the following scenario.

One has to develop a small Java program to store index numbers and marks in 2 subjects of a class of 40 students assuming that index numbers and marks are of type integers.

Which of the following array declaration(s) is/are most suitable and sufficient enough for the above problem?

- |   |   |
|---|---|
| (a) <code>int[] student_data = new int[40];</code>      | (b) <code>int[][] student_data = new int[40][2];</code> |
| (c) <code>int[][] student_data = new int[40][3];</code> | (d) <code>int[][] student_data = new int[10][1];</code> |
| (e) <code>int[] student_data = new int[120];</code>     |   |

33) The following Java code is found in a Java program.

```
System.out.println(Math.round(Math.random()*100));
```

It is also found that the reference Math is not pre-declared in the program as an instance of a class.

Select from among the following, correct statement(s) on the above?

- |  |
|--|
| (a) Both round() and random() are methods that are public. |
| (b) Both round() and random() are methods that are static. |
| (c) Math is an Abstract class.                             |
| (d) Math is a parent class.                                |
| (e) Random is a child class.                               |

34) Select the correct statements from among the following on constructor methods.

- |  |
|--|
| (a) Constructor methods have the same name as its class name.  |
| (b) Constructor methods can be overloaded.                     |
| (c) Return type of the constructor method is only String type. |
| (d) Abstract classes cannot have constructor methods.          |
| (e) No parameter is allowed into a constructor method.         |



- 35) Consider the following user requirement to write a Java program.

A Java program that prints a given number of stars, where the number is passed as a command line argument, for e.g.

C:\>java PrintStars 10 → Will give the output → \*\*\*\*\*

What would be the correct implementation of the above specification?

- |   |   |
|---|---|
| (a) <pre>public class PrintStars {<br/>    public static void main(String[] args) {<br/>        for (int i=0; i&lt;args[0]; i++) {<br/>            System.out.print('*');<br/>        }<br/>    }<br/>}</pre>                   | (b) <pre>public class PrintStars {<br/>    public static void main() {<br/>        int stars = Integer.parseInt(args[0]);<br/>        for (int i=0; i&lt;stars; i++) {<br/>            System.out.print('*');    }<br/>    }<br/>}</pre>              |
| (c) <pre>public class PrintStars {<br/>    public static void main(String[] args) {<br/>        for (int i=0; i&lt; args[0]; i++) {<br/>            System.out.print('*');<br/>        }<br/>    }<br/>}</pre>                  | (d) <pre>public class PrintStars {<br/>    public static void main(String[] args) {<br/>        int stars = Integer.parseInt(args[0]);<br/>        for (int i=0; i&lt;stars; i++) {<br/>            System.out.print('*');    }<br/>    }<br/>}</pre> |
| (e) <pre>public class HelloWorld {<br/>    public static void main(String[] args) {<br/>        for (int i=0; i&lt; Integer.parseInt(args[0]); i++)<br/>        {    System.out.print('*');<br/>        }<br/>    }<br/>}</pre> |   |

- 36) Select from among the following, correct statement(s) on Testing.

- |   |
|---|
| (a) Once the algorithm has been expressed in pseudocode it should be subjected to data driven check.  |
| (b) Test data must test what a program is required to do and not what it has been written to do.  |
| (c) The test data should test abnormal condition, boundary condition and all of the paths of logic in every procedure.                          |
| (d) An advantage of program walkthrough is that the reviewing panel may detect errors which could not be detected by the author of the program. |
| (e) Interactive debugging refers to an examination of the program algorithm with the aim of detecting errors in its procedures.                 |

- 37) Select from among the following, the correct statement(s) on different software design tools.

- |   |
|---|
| (a) Flow charts are diagrammatic representations of the flow of logic within a program or within an individual process. |
| (b) Nassi_Shneiderman(NS) diagrams emerged as a tool from structured programming.                                       |
| (c) Pseudocode is a diagrammatic tool which emerged as an Object Oriented Programming design tool.                      |
| (d) When compared to Flow charts, Nassi-Shneiderman(NS) diagrams are constructed without using arrows.                  |
| (e) In Pseudocode, there are no provisions for data definitions and scoping.  |

38) Consider the following Java program.

```
class StrDemo{
public static void main(String args[]) {
    String[] names={"Sanjeewa","Pathima","Koshika","Savithri","Diana"};
    for(int i=names.length-1;i>=0;i=i-2)
        System.out.println(names[i]);    } }
```

What would the output of the program be?

- |   |                                  |                                    |
|---|----------------------------------|------------------------------------|
| (a) Diana<br>Savithri<br>Koshika<br>Pathima<br>Sanjeewa | (b) Diana<br>Savithri<br>Koshika | (c) Koshika<br>Pathima<br>Sanjeewa |
| (d) Savithri<br>Pathima                                 | (e) Diana<br>Koshika<br>Sanjeewa |                                    |

39) Consider the following Java program.

```
class Exceptions{
    int[] arr1={1,2,3,4,5,6};    int[] arr2={10,11,12,3,14,15};
    public static void main(String args[]) {
        Exceptions ex= new Exceptions();
        ex.read(ex.arr1);    ex.read(ex.arr2);    }

    void read(int[] numArray){    int count=0;    int lastNum=0;
    try{
        while(count <= numArray.length){

            lastNum=numArray[count++];
            if(lastNum == -1 )
                return;
        }
    }catch(ArrayIndexOutOfBoundsException e){
        System.out.println("Check the condition");

    }finally{        System.out.println("Last number read " + lastNum);
    }
    return; }}

```

What would the output of the program be?

- |   |   |
|---|---|
| (a) Check the condition                       | (b) Check the condition<br>Check the condition  |
| (c) Last number read 6<br>Last number read 15 | (d) Check the condition<br>Last number read 6<br>Check the condition<br>Last number read 15 |
| (e) error                                     |   |

40) Select correct statements from among the following on Java applets.

- |   |
|---|
| (a) Applets are run by using a Java interpreter to load its main class file.<br>(b) Applets cannot read or write files on the user's file system.<br>(c) appletviewer is a utility which can be used to view an applet.<br>(d) Applets begin their execution through the main() method.<br>(e) In the <APPLET> tag there are three attributes namely paint, start and stop. |
|---|

41) Select the exception classes from among the following which are part of the java.lang package.

- |                           |                      |
|---------------------------|----------------------|
| (a) Exception             | (b) IOException      |
| (c) MalformedURLException | (d) RuntimeException |
| (e) EOFException          |                      |

42) Consider the following program written in Java.

```
import java.io.*;
class StreamsEx{
public static void main(String[] args)throws IOException{
FileReader text= new FileReader("readme.txt");    int inByte;
    do{
        inByte =text.read();    if(inByte != -1)
            System.out.print(inByte);
        }while(inByte != -1);
    System.out.println("");
    text.close();  }}
```

Assume that the readme.txt file contains the following content.

ABC

What would the output of the program be?

- |            |            |           |
|------------|------------|-----------|
| (a) ABC    | (b) abc    | (c) error |
| (d) 656667 | (e) 979899 |           |

43) Consider the following class definitions.

```
class Modifier{ protected int x; private float y; public String str;
    Modifier() { x=1; y=2.0f; str="BIT"; }
    public float readY(){ return y; } }
    class Child extends Modifier{ protected int z; }
```

Consider the following Driver Program which is written in the same file.

```
class DriverPrg{
public static void main(String[] args){ Child ob=new Child();
System.out.println(ob.x +" "+ob.readY()+" "+ob.str+" "+ob.z );    }}
```

What would the output of the program be?

- |                 |                 |               |
|-----------------|-----------------|---------------|
| (a) error       | (b) 1 2.0 BIT 0 | (c) 1 2.0 BIT |
| (d) 0 0.0 BIT 0 | (e) 0 0 0 0     |               |

44) Consider the following program written in Java.

```
class Selection{  
public static void main(String args[]){ int x=7;  if(x==2); //← Note the semicolon  
                                         System.out.println("Number seven");  
                                         System.out.println("Not seven");           } }
```

What would the output of the program be?

- |                               |           |               |
|-------------------------------|-----------|---------------|
| (a) Number seven<br>Not seven | (b) error | (c) Not seven |
| (d) Number seven              | (e) 7     |               |

45) Consider the following program written in Java.

```
import java.awt.*;      import java.applet.Applet;  
public class AwtQuizze extends Applet{  
    Label one= new Label("Oshadha",Label.CENTER); Label two= new Label("Kanchana");  
    Label three= new Label("Ranasinghe",Label.RIGHT);  
    GridLayout layout=new GridLayout(3,1);  
    public void init(){ setLayout(layout); add(one); add(two); add(three);  }}
```

After compiling the program, the following set of codes is also written and saved separately by giving the name Awt.html.

```
<applet code="AwtQuizze.class" height=150 width=100></applet>
```

What would the outcome be when appletviewer is invoked by providing the file Awt.html?

