



UNIVERSITY OF VOCATIONAL TECHNOLOGY

Faculty of Training Technology

Bachelor of Technology in Information & Communication Technology

2012 / 2015

Year I – Semester-I Examination - September -2012 MMW/2014/B1/15

Object Oriented Programming in C++ and Java (ICTCO 10306)

Duration : 03 Hours

Part A

(30 marks)

Write short answers in given paper. Each question carries equal marks

1. Write a statement that uses an arithmetic assignment operator to increase the value of the variable *temp* by 23 and write the same statement without the arithmetic assignment operator.
2. Write a statement that defines a one-dimensional array called *doubleArray* of type *double* that holds 100 elements
3. Write the common formula (syntax) for data structures
4. Name and describe the usual purpose of three expressions in a for statement
5. Write a structure specification that includes three variables. All are int data type called *hrs*, *min* and *sec*. Call this structure *time*.
6. Write a statement that sets the *hrs* member of the *time2* structure variable equal to 12.
7. Write a class declaration that creates a class called *animal* with one private data member, *weight*, of type int and one public function whose declaration is void (*Habit*).
8. Declaration for a function called *blyth()* that takes two arguments and returns type char. The first argument is type int, and the second argument is type float with a default value 3.14.
9. Write a while loop that displays the numbers from 100 to 110.
10. Write a switch statement that prints Yes if a variable *ch* is 'y', prints No if *ch* is 'n', and prints unknown response otherwise.
11. Write a statement that sets the variable *animal* equal to the *paw* member of the *dogs* member of the *fido* variable
12. Name three stream classes commonly used for disk I/O
13. Write a statement that uses a string library function to copy the string *name* to the string *blank*.
14. Write an expression that accesses a structure member called *salary* in a structure variable that is the 17th element in an array called _____.
15. Write the declaration for a class called *dog* that contains 2 data members. A string called *breed* & an int called *age* (don't include any member function)

Part B**(40 marks)****Answer any four questions. Each question carries equal marks**

1. Create a structure called `employee` that contains two members: an employee Number (type `int`) and the employee's compensation (type `float` in dollars). Ask the user to fill in this data for 2 employees, store it in two variables of type `struct employee`, and display the information for each employee.
2. Write a temperature conversion program that gives the user the option of converting Fahrenheit to Celsius or Celsius to Fahrenheit. Then carry out the conversion. Use floating point numbers. Interaction with the program might look like this. ($C = 5/9 * (F - 32)$)

Type 1 to convert Fahrenheit to Celsius
2 to convert Celsius to Fahrenheit : 1

Enter temperature in Fahrenheit : 70
In Celsius that's 21.11

3. Print 20 stars in 10th row, 30th column on the screen using user define function.
4. Write a program to read the name and age of the person and display the result using classes. Class name called `person` and 2 member function called `getdata()` and `display()`. Use member functions outside the class definition.
5. Program to write square & cube of natural numbers in a file. Program creates a file name "`table`". The contents of the file are reproduced below.

Number	square	cube
1	1	1
2	4	8
3	9	27
10	100	1000

Java Programming**(30 marks)****Answer any two questions. Each question carries equal marks**

- (1) (a) Differentiate between the source code and the bytecode
- (b) Write a Java program to accept a currency amount in Rupees without cents and then using the quotient and remainder operators extract and print currency notes of different values required to pay the given currency amount.

Note: To pay an amount you are allowed to use only Rs.5000, Rs.2000, Rs.1000, Rs.500, Rs.100, Rs.50, Rs.20 and Rs.10 notes. Always your program should output the minimum possible number of notes set.

- (c) Give the output of the following programme.

```
class MyName
{
    public static void main(String[] args)
    {
        String name="John R. Hubbard";
        System.out.println(name);
        System.out.println(name.length());
        System.out.println(name.charAt(5));
        System.out.println(name.indexOf('.'));
        System.out.println(name.toUpperCase());
        System.out.println(name.toLowerCase());
        System.out.println(name.replace('b','f'));
    }
}
```

- (2) (a) Name the 8 primitive data types of Java?
(b) What's wrong with following code?

```
Switch(n)
{
    Case 1: a=11;
        B=22;
        Break;
    Case 2 : c=33;
        Break;
        D=44;
}
```

- (c) Write a Java code to generate the output given below.

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

- (d) Give the output of the following code.

```
class TestArray
{
    public static void main(String[] args)
    {
        int[] ints={22,44,66,88};
        System.out.println(ints.length);
        System.out.println("ints[2]:"+ints[2]);
        ints[2]=99;
        for(int i=0; i<ints.length; i++)
        {
            System.out.print(ints[i]);
        }
    }
}
```

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- (3) (a) Differentiate between an Applet and an Application.
(b) Give two methods to run an applet.

- (c) Give the output of the following program.
class Bank Account

```
{  
    private int ID;  
    private String Name;  
    private float Balance;  
  
    public void Deposit(float Amt)  
    {  
        Balance = Balance + Amt;  
    }  
  
    public void Withdrawal (float Amt)  
    {  
        if ( (Balance - Amt)<500)  
        {  
            System.out.println("Insufficient Fund");  
        }  
        else  
        {  
            Balance = Balance - Amt;  
        }  
    }  
}  
  
    public void setDetails(int vID, String vName)  
    {  
        ID = vID;  
        Name = vName;  
        Balance=500;  
    }  
  
    public void getDetails ()  
    {  
        System.out.println("ID:" + ID);  
        System.out.println("Name:" + Name);  
        System.out.println("Balance:" + Balance);  
    }  
}
```

/* the class Test is to exercise the BankAccount class, by creating instance of it, and calling the necessary methods to perform transaction. */

public class TestAccount

```
{  
    public static void main (String args[])  
    {  
        BankAccount Keyur= new BankAccount();  
        Keyur.setDetails(1001, "Keyur Shah");  
        Keyur.Deposit(10000);  
        Keyur.getDetails();  
        Keyur.Withdrawal(2000);  
        Keyur.getDetails();  
        Keyur.Withdrawal(25000);  
        Keyur.getDetails();  
    }  
}
```

2. Provided below is the comparison of two bicycle types.

Bicycle type	Pushbike	Motorbike
Color	Black	Gray
No. of wheels	2	2
Additional passengers	Not applicable	1
Fuel consumption (litres per km)	Not applicable	0.02
Maximum speed (km/hr)	10	100

The Motorbike can be considered as a specialized type of the Pushbike. Implement the above classes in Java. You need to calculate the distance traveled by each bicycle type in 5 hours if the maximum speed is used.

Your coding should include

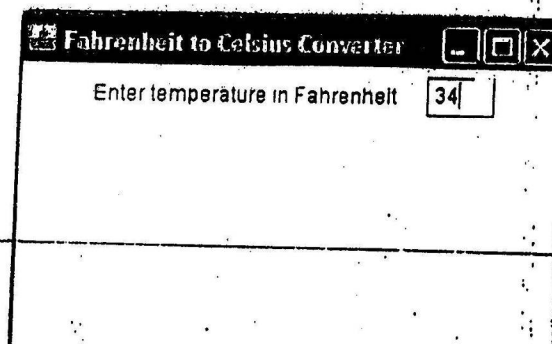
- (i) Use of the most appropriate constructor for code re-use (5 marks)
 - (ii) Calculation of the distance traveled by each of the bicycles type using OO techniques and code re-use (10 marks)
 - (iii) Calculation of fuel consumption using the appropriate method calling (5 marks)
 - (iv) Output of all relevant parameters captured and calculated (5 marks)
3. You are required to create a graphical application for the conversion of a temperature given in Fahrenheit to Celsius. Both the input as well as output should appear in the GUI. You should also activate the window closing feature in your application.

The mathematical equation giving the relationship between Fahrenheit to Celsius is as shown.

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

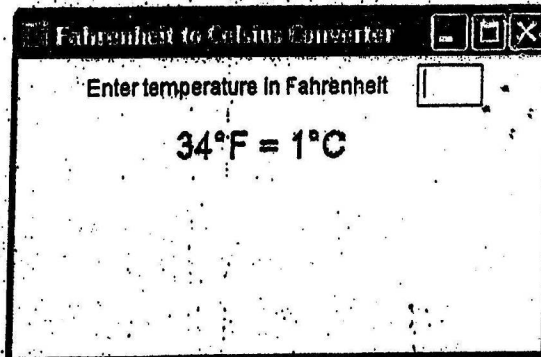
Your application should look like follows:

- (i) You input the temperature in Fahrenheit in a Text Field as shown (12 marks)



- (ii) After you press enter at the Text Field, your application needs to do the necessary processing to convert the Fahrenheit temperature to Celsius and display in a label field as shown.

(13 marks)



4. You are required to create an applet that will grow and shrink the balloon given. When you press the "Little" button the balloon will shrink (12.5 marks) and when you press the "Large" button the balloon will grow (12.5 marks)

