KABARAK UNIVERSITY

EXAMINATIONS

2008/2009 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF BUSINESS MANAGEMENT & INFORMATION TECHNOLOGY

COURSE CODE: BMIT 226

COURSE TITLE: COMPUTER PROGRAMMING

STREAM: Y2S2

DAY: THURSDAY

TIME: 9.00 – 11.00 A.M.

DATE: 06/08/2009

INSTRUCTIONS:

- Answer all questions in section A and any two questions from section B.
- Time: 3 Hours

PLEASE TURN OVER

SECTION A: ANSWER ALL QUESTIONS FROM THIS SECTION

Question 1 (20 Marks)

(a). Explain the things you do during the following stages of program development;

    (i). Analysis stage.   (ii). Design stage.   **(4 Marks)**

(b). Explain the work of any four personnel in software development.   **(4 Marks)**

(c). (i). Give <u>four</u> functions of a compiler.   **(2 Marks)**

    (ii). Explain <u>two</u> differences between a compiler and an interpreter.   **(2 Mark)**

(d). (i). Explain the importance of program documentation.   **(1 Mark)**

    (ii). Explain three types of program documentation.   **(3 Marks)**

(e). (i). Give <u>two</u> reasons for software maintenance.   **(1 Marks)**

    (ii). Describe how you ensure that your program is maintainable.   **(3 Marks)**

Question 2 (15 Marks): Answer all questions based on C++ language

(a). Is each of the following names a valid identifier in C++? State either **Yes** or **No**.

(i) int_A	(ii) get value	(iii) a+b
(iv) Float	(v) _sum	(vi) computer **(3 marks)**

(b). Each of the following has a special use in C++. State the work of each.

(i) %	(ii) *	(iii) !=
(iv) ()	(v) ;	(vi) ‖ **(3 Marks)**

(c). What does each of the following codes instruct the computer to do?

(i) char x[5];	(ii) x-=y;	(iii) x==y
(iv) x--;	(v) x();	(vi) cout<<x[c]; **(3 Marks)**

(d). What are the outputs of the following sections of code?   **(3 Marks)**

    (i)   int x=5;
```
int x=5;
while (x<10)
    cout<<x++;
```

    (ii) int x=5;
```
int x=5;
while (x++<=10)
    cout<<x;
```

(e). (i). Assume an array named **x** for storing twenty integers. Write code to output the integers in the array.   **(1.5 Marks)**

    (ii). Write the definition of a function named **x** that receives two float numbers and returns their sum.   **(1.5 Marks)**

Question 3 (15 Marks): Answer all questions based on Visual Basic language

(a). What do the following terms in Visual Basic mean? Also give an example for each.

    (i). A control   (ii). Event   (iii). Event procedure   **(3 Marks)**

(b). State the main difference between the following.
    (i). A label box and a text box.   (ii). Check boxes and option buttons.
    (iii). A combo box and a list box.   **(3 Marks)**

(c). (i). Apart from name, list <u>eight</u> other inbuilt properties of a command button. **(2 Marks)**
    (ii). When connecting an application to a database, you set two properties of the connection
        of the data environment. What are these two properties?   **(1 Mark)**

(d). Apart from the menu bar and the toolbar sections, explain <u>three</u> other sections in the Visual
    Basic working screen.   **(3 Marks)**

(e). What are the following features in Visual Basic? Illustrate.
    (i). Auto list members   (ii). Auto complete   **(3 Marks)**

SECTION B: ANSWER ANY TWO QUESTIONS FROM THIS SECTION

Question 4 (25 Marks)

(a). (i). Describe why decision making and repetition is unavoidable in the development of
      typical business applications. Use examples.   **(5 Marks)**

    (ii). What is an indefinite loop?   **(1 Mark)**

(b). Consider the following flowchart and answer the questions below.
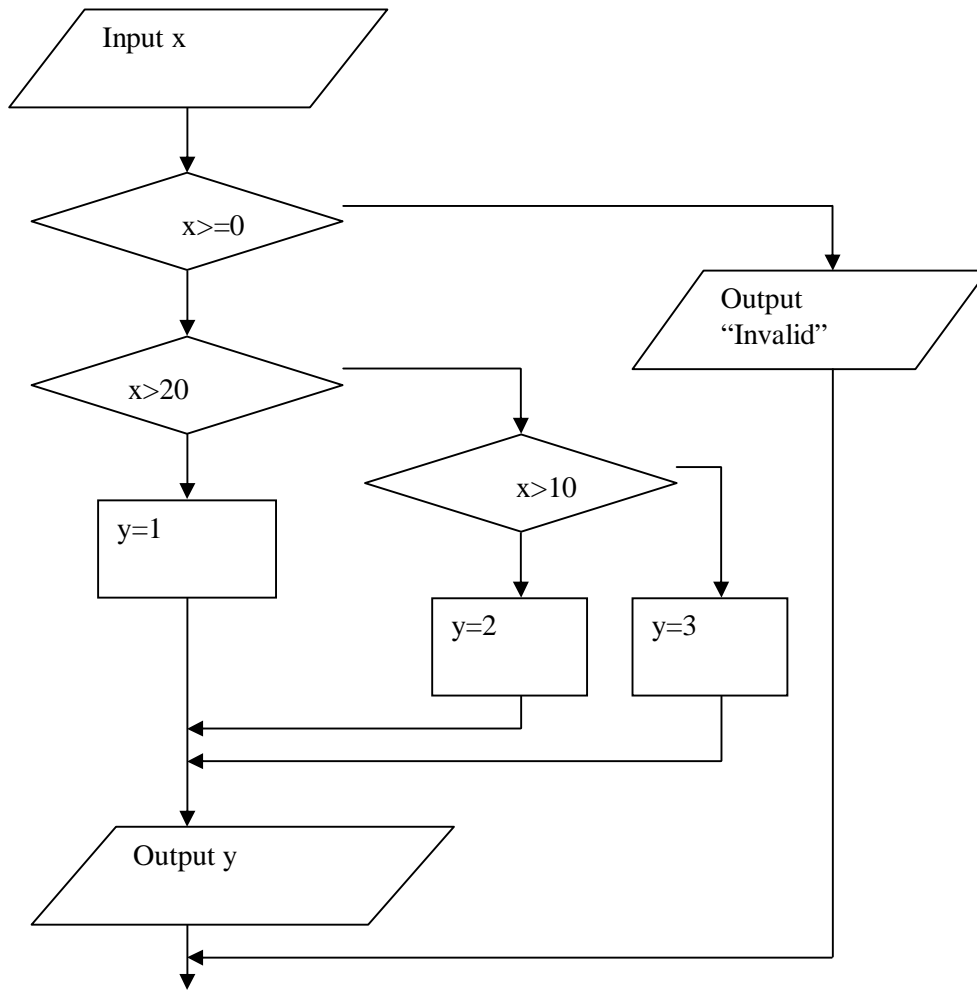
(i). Fill in the following test table for the code. **(3 Mark)**

Input	Output
-4	
5	
10	
15	
20	
25	

(ii). Write C++ code for the flowcharts. **(3 Marks)**

(iii). Write Visual Basic code for the flowcharts. **(3 Marks)**

(c). Assume you want to write code to input marks obtained by fifty (50) students into an array (using **x** as the array's name). The program should then compute the total number of students who passed i.e. had a mark of at least 40.
Write sample code using;
(i). C++ language. **(5 Marks)**
(ii). Visual Basic language. **(5 Marks)**

Question 5 (25 Marks): Answer all questions based on C++ language.

(a). Consider the following C++ code.

```
int c, numb, count;
c=0, count=0;
do
{
    cout<<"\nInput an integer";
    cin>>numb;
    if (numb>0)
        count++;
    c++;
}while (c<10);
cout<<count;
```

    (i). Explain what the code does. **(2 Mark)**
    (ii). Draw flowchart diagrams for the code; **(6 Marks)**
    (iii). Rewrite the code using the **for** loop instead of the **do … while** loop. **(3 Marks)**

(b). Write the outputs of the following codes. **(6 Marks)**

    (i). int x, y=4;   (ii). int x, y=4;
          x=++y;   x=y++;
          x*=y;   y-=x;
          cout<<x<<", "<<y;   cout<<"x="<<x<<", y="<<y;

    (iii). int x[10]={8, 9, 1, 2, 8, 3, 4, 6, 5, 7}, c;
          for (c=0; c<10; c++)
             if (x[c]<5)
                cout<<"\n"<<c<<","<<x[c];

(c). (i). Write down the definition of a function (named **x**) that receives three float numbers and returns their mean value. **(3 Marks)**

    (ii). Write sample code to call the above function. **(1 Mark)**

(d). Write code to input 100 float numbers into an array named **x**. The code then searches for the first occurrence of the number 10 in the array and outputs the index. **(4 Marks)**

Question 6 (25 Marks): Answer all questions based on Visual Basic language.

(a). A Visual Basic sales application is required to input the following;

- Quantity of the sold item
- The price of the item
- The category of the item – using a list box.
- Category of the customer – either "Regular" or "Normal" – using an option control.

The application should compute and display the amount charged. Note that **Regular** customers are given a 2% discount if the sales amount is at least 10,000. Further, all items

belonging to **clothes** category are given a discount of 5% provided the quantity purchased is at least 2. Answer the questions below.

(i). Sketch the graphical user interface (include the relevant objects' names). **(4 Marks)**

(ii). Write the Visual Basic code for the application. **(8.5 Marks)**

(b). (i). Design a Visual Basic GUI to input the following four details of a vehicle: The current value of the vehicle, the age of the vehicle (number of years), the capacity range (either less than 1500, or at least 1500 but less than 2200, or at least 2200) – using option controls, and whether or not the vehicle is meant for commercial use – using checkbox control. Also give appropriate names of the relevant objects in the GUI. **(4 Marks)**

(ii). Write Visual Basic code for the above GUI to input the details of a vehicle and compute the tax charged for the vehicle using the following rules.
- The tax is 1000 (for capacity of less than 1500), 1400 (for capacity of at least 1500 but less than 2200), or 1800 (for capacity of at least 2200).
- Vehicles which are at least fifteen years of age are charged an additional 1% of their value.
- Commercial vehicles are charged an additional 2% of their value. **(8.5 Marks)**

Question 7 (25 Marks)

(a). Write the output of each of the following pieces of code.

(i). int m[10]={4,2,0,0,3,0,4,6,0,7}, n, count=0;
```
    for(n=0;n<10;n++)
        if (m[n])
            count++;
    cout<<count;
```
(3 marks)

(ii). int m=0;
```
    while (m++<3)
        cout<<m;
```
(2 Marks)

(b). Scan through the following program and assuming the user inputs the values shown below (in parts (i) and (ii)), write down the <u>output</u> in each case.

```
#include <iostream.h>

int x(int a, int b)
{
    int result=b;
    while (a>result)
```

```
{    result+=b;    }
        if (a==result)
            return(0);
        else return(a-(result-b));
}

void main()
{
        int m, n, result;
        cout<<"\nInput first integer  ";cin>>m;
        cout<<"\nInput second integer ";cin>>n;
        if (m>=n)
        {    result=x(m, n);
            cout<<"\nResult: "<<result;
        }
        else cout<<"\nThe first No. should be greater or equal to the second.";
}
```

     (i).   m= 20, n=4   (ii). m=20, n=7   **(10 Marks)**

(c). Write down the output of the following.

```
#include <iostream.h>
const char outerChar='*';
const char innerChar=' ';
const int sizeX=5;
const int sizeY=6;

void move()
{ cout<<"\n";   }

void show(char myChar, int noOfTimes)
{ for (int i=0;i< noOfTimes;i++)
        cout<<myChar<<" ";
}

void cover()
{ show(outerChar,1);show(outerChar,sizeX-2);show(outerChar,1);
  move();
}

void centre()
{ int i;
  for (i=0;i<sizeY-2;i++)
  {    show(outerChar, 1);show(innerChar,sizeX-2);show(outerChar,1);
      move();
  }
}
```

```
int main()
{ cout<<"MY OBJECT\n";
  cout<<"========\n";
  cover(); centre(); cover();
  return(0);
}
```

(10 Marks)