

**KABARAK**



**UNIVERSITY**

**EXAMINATIONS**

**2008/2009 ACADEMIC YEAR**

**FOR THE DEGREE OF BACHELOR OF BUSINESS  
MANAGEMENT AND INFORMATION TECHNOLOGY**

**COURSE CODE:      BMIT 226**

**COURSE TITLE:     COMPUTER PROGRAMMING**

**STREAM:            Y2S2**

**DAY:                MONDAY**

**TIME:               8.30 -11.30 A.M.**

**DATE:               08/12/2008**

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**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 IN THIS SECTION**

### **Question 1 (20 Marks)**

- (a). (i). List the things included in the analysis stage of software development. **(2 Marks)**
- (ii). List four software testing strategies. **(2 Marks)**
- (b). Explain the work of four personnel involved in software development. **(4 Marks)**
- (c). (i). Why is software documentation important? **(1 Mark)**
- (ii). Describe three types of software documentation. **(3 Marks)**
- (d). (i). Give four reasons for software maintenance. **(2 Marks)**
- (ii). Describe how you ensure that your program is maintainable. **(2 Marks)**
- (e). (i). Define the following programming terms.  
(I). Object program (II). Array  
(III). Control structure (IV). Debugging **(2 Marks)**
- (ii). List four functions of a compiler. **(2 Marks)**

### **Question 2 (15 Marks): Answer all questions using the C language**

- (a). State whether the following names are valid identifiers in C? State either **Yes** or **No**.  
(i) a\*b (ii) 3bc (iii) \_NUM  
(iv) Value\_int (v) get value (vi) VALUE\_3 **(3 marks)**
- (b). Each of the following characters has a special use in C. State the work of each.  
(i) = (ii) ! (iii) / (iv) [ (v) # (vi) ' **(3 Marks)**
- (c). Write the output of the following sections of code. **(3 Marks)**
- (i). `int a, b=4;  
a=++b;  
a+=b;  
printf("%d, %d", a, b);`
- (ii). `int a, b=4;  
a=b++;  
b*=a;  
printf("%d and %d", a, b);`
- (d). Write the output of the following codes. **(3 Marks)**
- (i). `int c=1;  
while (c++<5)  
printf("\n%d", c);`
- (ii). `int c=1;  
while (++c<5)  
printf("%d, ", c);`

(e). Consider the following code.

```
int x, y;
scanf("%d", &x);
if (x>2)
{
    if (x<=8)
        y=1;
    else y=2;
}
else y=3;
```

**Required:** Fill in the following test table for the above code.

**(2 Marks)**

x	y
10	
2	
8	
0	

(f). State the work of the following code sections.

(i). `m==n`                      (ii). `check()`;

**(1 Mark)**

**Question 3 (15 Marks): Answer all questions using Visual Basic language**

(a). Briefly describe the steps of producing a Visual Basic application.

**(3 Marks)**

(b). (i). Apart from name, list six other properties of a form.

**(1.5 Marks)**

(ii). How do we make declaration of variables mandatory?

**(0.5 Marks)**

(c). List any twelve keywords in Visual Basic.

**(3 Marks)**

(d). (i). Assume a command button named 'cmdMyCommand'. Write the first and the last lines of the click event procedure of the command button.

**(1 Mark)**

(ii). Assume you are currently at the form module of the above command button and you want to have the above two lines in the code module. What are three ways of doing this?

**(2 Marks)**

(e). (i). Write Visual Basic code input a positive integer **M** and output the numbers **1, 2, 3, ..., M**.

**(2 Mark)**

(ii). Describe two ways of giving an object's property a value.

**(2 Marks)**

## **SECTION B: ANSWER ANY TWO QUESTIONS FROM THIS SECTION**

### **Question 4 (25 Marks)**

(a). (i). List any two built-in functions in C. **(1 Mark)**

(ii). Write the definition of a C function named **equal** that receives two characters and returns either value 1 if the characters are identical or 0 if otherwise. **(2 Marks)**

(iii). What are two ways of calling the above function? Write the appropriate statements. **(2 Mark)**

(b). Consider the following code.

```
int c; c=10;
while (c>=5)
{
    printf("%d", c); c--;
}
```

### **Required**

(i). Write the output of the code. **(1 Marks)**

(ii). Write equivalent code using the **do .. while** loop instead of the **while** loop. **(2 Marks)**

(ii). Write equivalent code using the **for** loop instead of the **while** loop. **(2 Marks)**

(c). (i). Explain the main advantage of using arrays over using variables. **(1 Mark)**

(ii). Write the output of the C code. **(2 Marks)**

```
int a[7]={3, 4, 1, 0, 3, 5, 7}, b[7]={1, 6, 7, 0, 3, 6, 1}, c, d=0;
for (c=0;c<7;c++)
    if (a[c]==b[c])
        printf("%d", a[c]);
    else d++;
printf("\n%d", d);
```

(iii). Assume an array named **x[10]** – for storing float numbers. Write C code to count the total number of the array elements which are greater than 10. **(2 Marks)**

- (d). A student wrote the following program to compute the radius and the circumference of ten circles. However, he made some errors. Identify **six errors** he made (show the line number and the error). **(6 Marks)**

```

//PROGRAM TO COMPUTE AREA, CIRCUMFERENCE OF TEN CIRCLES
#include <stdio.h>

void main()
{
    Double pi=3.14, radius, area, circ; // declare pi, radius, area, circumference

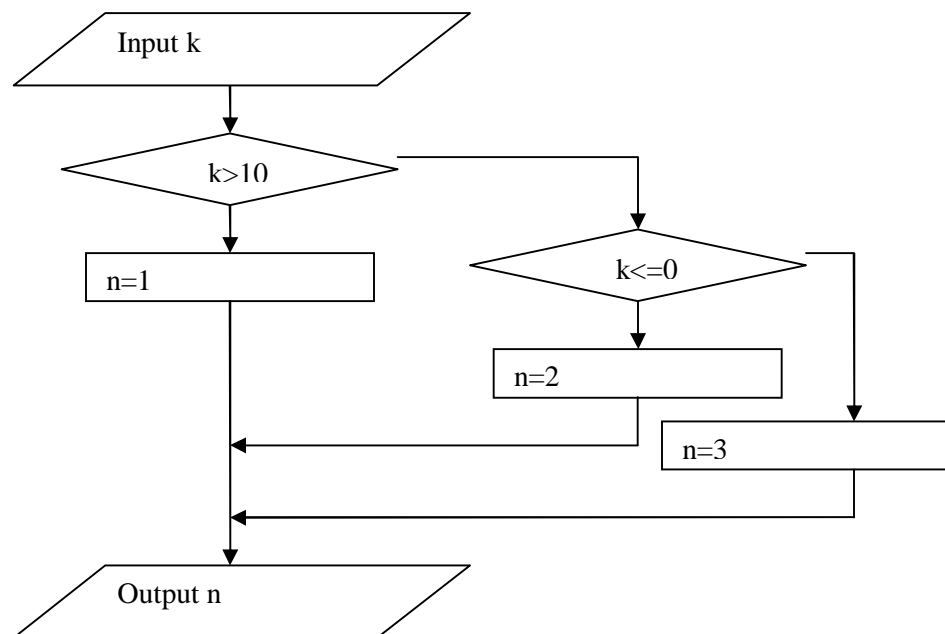
    for (count=0;count>10;count++)
    {
        printf("\n"Input the radius", scanf("%f",&radius); // input radius

        //compute area, circumference
        area=pi*radius*radius;
        circ=2*pi*radius;

        // output
        printf("\nArea: %f", area);
        printf("\nCicumference: %f", circ);
        count=count+1;
    }
}

```

- (e). Consider the following flowchart and answer the questions below.



- (i). Fill in the following test table for the code. (2 Marks)

Input	Output
0	
-3	
15	
10	

- (ii). Write C code for the flowcharts. (2 Marks)

**Question 5 (25 Marks)**

- (a). (i). List any eight events in Visual Basic. (2 Marks)

- (ii). Write a Visual Basic statement to  
(I). Declare a variable named **x** of integer type.  
(II). Declare a constant named **pi** for storing value 3.14 (1 Mark)

- (iii). Give the character used in Visual Basic to;  
(I). combine two statements on the same line  
(II). Continue a statement on the next line (1 Mark)

- (iv). List the major steps of connecting a Visual Basic application to a database using the data environment control. (2 Marks)

- (b). Write down a Visual Basic function named **get\_product** that receives three integers and returns their product. (3 Marks)

- (c). Write Visual Basic code to input an integer **k**. If **k** is positive, the code then computes and outputs the sum of  $1+2+3+\dots+k$ . If **k** is negative, the code computes and outputs the sum  $-1-2-3-\dots-k$ . If **k** is zero, the code outputs the message, "Invalid input". (6 Marks)

- (d). (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), and whether the vehicle is meant for personal or commercial use. Also give appropriate names of the objects in the GUI. (4 Marks)

- (ii). Write Visual Basic code for the above GUI that computes the tax charged for the vehicle using the following rules.

- The tax is 1000 (for capacity of less than 5000), 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. (6 Marks)

**Question 6 (25 Marks)**

- (a). (i). List four different C statements each of which increments the value of a variable named **k** by 1. **(2 Marks)**

(ii). Consider the code below;

```
int a, b;
for (a=1;a<5;a++)
{   printf("%d: ", a);
    for (b=1;b<a;b++)
        printf("%d,",a);
    printf("%d.", a);
    printf("\n");
}
```

**Required:**

(I). Write down the **output** of the code. **(2 marks)**

(II). Write equivalent code using **while loops** instead of for loops. **(3 marks)**

(III). Write equivalent code using the **do ... while** loops. **(3 Marks)**

- (b). Consider the following steps.

Input the number of customers.

For each customer, input his credit level as well as the amount of withdrawal requested by him. If the withdrawal is not more than the credit level, then effect the withdrawal (decrement the credit with the withdrawal), else, give an error message. Also give message that the transaction is successful.

Also compute the total amount withdrawn by all customers.

**Required**

(i). Draw flowchart diagrams for the solution. **(5 Marks)**

(ii). Write code for the flowcharts in Visual Basic language. **(5 Marks)**

- (c). Assume database table (named **Item**) for storing the following details of items:

**ItemCode, Name, Price.**

A Visual Basic interface that is linked to the above database table through a data environment control named **dteItem** is required, and should allow the user to delete a record.

**Required**

(i). Sketch an appropriate Graphical User Interface (GUI) for the above and write down the GUI's objects' names. **(2 marks)**

(ii). Write Visual Basic code for the application. Include error control. **(3 Marks)**