

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: MONDAY

TIME: 9.00 – 12.00 P.M.

DATE: 23/03/2009

INSTRUCTIONS:

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

PLEASE TURN OVER

Question 1 (20 Marks)

- (a). Explain the steps followed to produce computer programs. **(4 Marks)**
- (b). What is the work of the following in software development?
(i). System analyst
(ii). Programmer
(iii). Software engineer
(iv). Clerk **(4 Marks)**
- (c). Programming languages can be classified into various types. Explain any four of these types. **(4 Marks)**
- (d). Describe the following software testing strategies.
(i). Stress testing
(ii). White box testing **(4 Marks)**
- (e). (i). Give four properties of a good computer program. **(2 Marks)**
(ii). Give any four flowchart symbols and their meanings. **(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). Paul (ii). 1st_num (iii). char_1
(iv). include (v). f (vi). final result **(3 marks)**
- (b). Give two ways in which you use each of the following characters in C.
(i). * (ii). < (iii). { **(3 Marks)**
- (c). What do the following statement instruct the computer to do?
(i). char a; (ii). a-=b; (iii). a=b;
(iv). a--; (v). a(); (vi). int a[5]; **(3 Marks)**
- (d). What are the outputs of the following sections of code? **(3 Marks)**
(i).

```
int a=5;
while (a++<10)
    printf("\na=%d", a);
```


(ii).

```
int a, b=5, c;
a=++b;
c=b++;
printf("a=%d, b=%d, c=%d", a, b, c);
```
- (e). (i). Assume an array named **a** for storing twenty float numbers. Write code to compute the sum of the array. **(1.5 Marks)**
(ii). Write the definition of a function named **equal** that receives two characters and returns either **true** (if the characters are equal) or **false** (if otherwise). **(1.5 Marks)**

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

- (a). Assume you have been contracted by Kabarak University to produce a students registration program. Describe how you would ensure that the program is;
- (i). Usable (ii). Modifiable (5 Marks)
- (b). There are various inbuilt properties of an object that you can set. List any eight (8) properties of a form. (2 Marks)
- (c). List any eight (8) controls in Visual Basic. (2 Marks)
- (d). List any eight (8) events in Visual Basic. (2 Marks)
- (e). Give the work of the following keywords in Visual Basic.
- (i). Dim (ii). Wend (iii). Next (vi). As (2 Marks)
- (f). Write a Visual Basic statement to
- (i). Declare a variable named **y** for storing decimal numbers.
- (ii). Declare a constant named **pi** for storing value 3.14 (1 Mark)
- (g). The following characters have special meanings in Visual Basic. State their work.
- (i) _ (ii) : (1 Mark)

SECTION B: ANSWER ANY TWO QUESTIONS FROM THIS SECTION

Question 4 (25 Marks)

Answer all questions using C language

- (a). (i). Describe why it is advantageous to use arrays as compared to using variables to hold values in large scale programming. (2 Marks)
- (ii). Assume an array named **a[50]** for storing fifty float numbers. Write code in **C** to count the number of the array elements that are positive. (2 Marks)
- (iii). Explain what functions are as well as their advantage in programming. Also show the syntax of writing a non-void function. (3 Marks)
- (b). Consider the following code.
- ```
int c=1, b;
while (c<=5)
{
 scanf("%d", &b);
 if (b>0)
 printf("\nPositive value entered");
 else
 printf("\nNon-positive value entered");
 c++;
}
```

**Required**

- (i). Explain what the code does. **(1 Mark)**
- (ii). Draw flowchart diagrams for the code. **(4 Marks)**
- (iii). Write equivalent code using the **do ... while** loop instead of the **while** loop. **(2 Marks)**
- (iv). Draw flowchart diagrams for the code in part (4b (iii)) above. **(4 Marks)**
- (c). A student wrote the following program for computing the sales made in twenty items. The user is to input the price and quantity of each item, and then the program computes the total sales. A discount of 5% is given if the total sale is more than 10000.

The student however made some programming errors. Identify seven errors he made.

**(7 Marks)**

```
/* PROGRAM TO COMPUTE SALES MADE IN TWENTY ITEMS */

#include <stdio.h>

void main()
{
 // declare variables
 double amount, price, discount, total_sales
 int quantity, count;

 // initialize count and total_sales to zero
 count=0, total_sales=0;

 // repeat for each item
 while (count>20)
 {
 printf("\nInput the price of the item"); scanf("%f", price);

 printf("\nInput the quantity sold"); scanf("%d", &quantity);

 amount=price*quantity;

 total_sales+=amount;
 }
 // compute discount
 if (total_sales>10000);
 discount=total_sales*5%;
 Else
 discount=0;

 total_sales-=discount;
 printf("\n"Total sales: %f", Total_sales);
}
```

**Question 5 (25 Marks)**

(a). Consider the following C code.

```
int x;
char *y;
scanf("%d", &x);

if (x<10)
 y="Wrong";
else
 if (x>=20)
 y="Wrong";
 else y="Correct";

printf("%s",y);
```

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

| Input | output |
|-------|--------|
| 10    |        |
| 2     |        |
| 18    |        |
| 20    |        |

(ii). Rewrite the **if** block so as to use the **&&** operator. (2 Marks)

(iii). Rewrite the **if** block as to use the **||** operator. (2 Marks)

(iv). Draw flowchart diagrams for the code. (4 Marks)

(b). Assume you want to store the fees paid by each of the 200 students using an array. Write statements in C language to declare the array and input the fees. (2 Marks)

(c). High school finalists in a particular country do four papers – Maths, Languages, Sciences, and Arts papers.

A Visual Basic application is required to input the marks obtained by a person in each of the four papers (using text boxes), as well as the applied university course – either BSc Computer Science or BMIT (using option controls). The application should output a message on whether the student is qualified for the course or not.

The requirements of the two courses are;

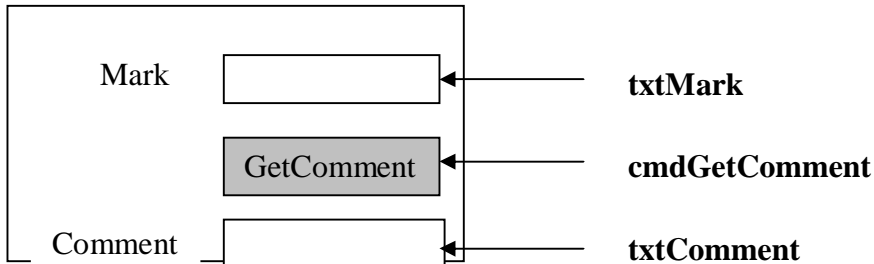
- **BSC Computer Science:** Mean mark $\geq$ 60, Maths $\geq$ 60, Sciences $\geq$ 50
- **BMIT:** Mean mark $\geq$ 50, Languages $\geq$ 55, Arts $\geq$ 50

**Required**

(i). Sketch an appropriate GUI for the application. Include objects' names. (4 Marks)

(ii). Write Visual Basic code for the application. (6 Marks)

(d). The following is a sketch of a Visual Basic application. It's used to input a mark obtained by a student in an exam and then get a comment after clicking the command button. The comment is either "Invalid mark" (if the mark is either greater than 100 or less than 0), or "Pass" (if the mark is at least 50), or "Fail" (if the mark is less than 50).



**Required.** Write the code for the application. (3 Marks)

**Question 6 (25 Marks)**

Answer all questions using Visual Basic language

(a). Assume database table (named **Item**) for storing the names and salaries people.

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 move to next record, move to first record, and delete a record.

**Required**

(i). Sketch an appropriate Graphical User Interface (GUI) for the above and write down the GUI's objects' names. (3 Marks)

(ii). Write Visual Basic code to implement the above three operations. Include error control. (7 Marks)

(b). A Visual Basic application is required to input the number of workers, and then input the basic pay of each, and compute the net pay after tax for each worker. Tax is computed as follows;

| <b>Basic pay range</b>               | <b>Tax rate</b> |
|--------------------------------------|-----------------|
| Less than 10,000                     | No tax          |
| At least 10,000 but less than 50,000 | 15%             |
| At least 50,000                      | 17%             |

**Required**

Sketch an appropriate GUI for the application and write the Visual Basic code.

**Hint:** Use the **InputBox()** and **MsgBox()** functions. (7 Marks)

(c). Consider the following steps.

Input the customer's 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) and output the new credit level, else, give an error message.

**Required**

(i). Draw flowchart diagrams for the solution. **(4 Marks)**

(ii). Sketch an appropriate Visual Basic GUI and write the code. **(4 Marks)**