UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2013/2014

COURSE NAME	:	COMPUTER PROGRAMMING
COURSE CODE	:	DAR 10103/ DAM 31303
PROGRAMME	:	1 DAR/ 2 DAR/ 3 DAI
EXAMINATION DATE	:	DECEMBER 2013/JANUARY 2014
DURATION	:	2 ½ HOURS
INSTRUCTION	:	A) ANSWER **ALL** QUESTIONS.
		B) ANSWER **TWO (2)** QUESTIONS ONLY.

THIS QUESTION PAPER CONSISTS OF **SEVEN (7)** PAGES

SECTION A

Q1   Flowchart can be used to design and represent algorithm. Draw the flow chart for the pseudo code below:

> *Start*
> *Set total to zero*
> *Set counter to one*
>
> *While counter is less or equal to five*
>   *Input the new total*
>   *Add the new total to the total*
>   *Add one to counter*
>
> *Set the average to the total divided by five*
> *Print the average*

(10 marks)

Q2   (a)   There are three (3) types of programming errors. Briefly described each of them.

(6 marks)

(b)   A typical program development environment consists of six phases to be executed as below:

EDIT → PREPROCESS → COMPILE → LINK → LOAD → EXECUTE

Explain two (2) of them.

(4 marks)

Q3   Identify and correct the errors in each of the following statements. Please circle the error(s) and rewrite the correct statement.
(Note: there may be more than one error per statement.)

(a)   `Printf("This is an easy course!\n);`

(b)   `scanf("d", value);`

(c)   `if (w = y)`
        `printf ("%d is equal to %d, w, y");`

(d)   `printf("My name is %c. I am %d years old", student_name[50], &age);`

(e)   `else;`
      `print("greater\n");`

(10 marks)

2

Q4 (a) Show the order of evaluation of the operators in the following C statement, and give the value of '**y**' after the statement is performed.

$$y = 2 * 5 * 5 + 3 * 5 + 7;$$

(3 marks)

(b) Produce the display output for the following program:

```c
#include <stdio.h>

main(){
  int x,y;

  x = 2;
  y = x + +;

  printf("%d\t",x);
  printf("%d\t",y);

  y = + + x;
  x = y % 3;

  printf("%d\t",x);
  printf("%d\t",y);

  y = x - -;

  printf("%d\t",x);
  printf("%d\t",y);

  y = 2 - 3 * 9 + 2 / 4 * 2;
  printf("%d\t",y);

  return 0;
}
```

(7 marks)

Q5 (a) Rewrite the following nested '*switch*' statement as a '*if...else*' statement:

```c
switch (category) {
    case 'A' : printf("Baby");
               break;
    case 'B' : printf("Teenager");
               break;
    default  : printf("Adult");
               break;
    }
```

(5 marks)

3

(b)   Rewrite the following 'do...while' statement as 'for' statement.

```c
double money = 0;
count = 0;
do
{
    printf("Enter amount");
    scanf("%f", & money);
    money += money;
    count++;
} while (count < 5)
```

(5 marks)

SECTION B

Q6 (a) Write a function prototype for each of the following statement:

(i) Function **square** that take one integer argument **s** and does not return a value.
(ii) Function **side** that does not receive any argument and returns an integer.

(4 marks)

(b) According to the **Q6(a)**, write a complete program if the function definitions are given as below. Main function should called function **side** to get the value of **s** and then called function **square** to print the output :

(i) Definition of function **square**:

```
{
  int i, j;

  for ( i = 1; i <=s ; i ++) {

  for ( j = 1; j <=s ; j ++)
        printf("*");

  printf("\n");
  }
```

(ii) Definition of function **side**:

```
{
  printf("Enter side: ");
  scanf("%d", &s);
  return s;
}
```

(6 marks)

(c) Identify the output if the user had entered **3** as the input for this program.

(3 marks)

(d) Modify the program as in **Q6(b)** to give the output as below:

```
#*#*#*#*    #*#*#*#*    #*#*#*#*
```

(9 marks)

(e) Label the *function prototype*, *function called* and *function definition* for program in **Q6(d).**

(3 marks)

5

Q7 (a) Consider a 3-by-4 integer array **LEGO**.

      (i)   Define a declaration for **LEGO**.
      (ii)   State, how many rows does **LEGO** have.
      (iii)   State, how many columns does **LEGO** have.
      (iv)   State, how many elements does **LEGO** have.
      (v)   Define the names of all elements in the second row of **LEGO**.
      (vi)   Define the names of all elements in the third row of **LEGO**.
      (vii)   Define the names of all the elements in the third column of **LEGO**.

(7 marks)

(b) Show the display output for the following fragment code:

```
int listA[]={1,3,7};
int listB[]={4,5,6};

for (int i=2; i >= 0; i--){

        printf("%d:",listB[i]);
        printf("%d\n",listA[i]*listB[i]);

}
```

(6 marks)

(c) Construct a C program that prints the values of each element of array **table**. Assume the array was initializes with the declaration,

        int table [3][3] = {{2, 13}, {1, 5, 7}, {19}};

and the integer variables **x** and **y** are declared as control variables.

(9 marks)

(d) Identify the output for program in **Q7(c).**

(3 marks)

Q8 (a) Construct the graphical representation of a pointer in memory based on the following segment code:

```
int s = 18;
int t = 4;
xPtr = & s;
yPtr = & t;
*yPtr = s * t;
```

(9 marks)

(b) For each of the following, write a single C statement.

(i) Declare the variable `fPtr` to be a pointer to an object of type `float`.
(ii) Assign the address of variables `number1` to pointer variable `fPtr`.
(iii) Define the function header for a function called `exchange` that takes two pointers to floating point number `x` and `y` as parameters, and does not return a value.
(iv) Define the function prototype for the function in part(ii).

(7 marks)

(c) Convert the following statement to appropriate C statements:

(i) A structure called `worker` which consist of three (3) data members: *Department*, *number of technician* and *number of engineer*.

(ii) `shiftA` as variable of type `worker`.

(iii) Assign the following values for specific data members:

Department : TEST
Number of technician : 30
Number of engineer : 3

(6 marks)

(d) There are two (2) communication ports that been use in C applications. Compare both of them.

(3 marks)

- END OF QUESTION -