CONFIDENTIAL

Infrastructure University
Kuala Lumpur

FINAL EXAMINATION
JUNE SEMESTER 2016

BACHELOR OF SOFTWARE ENGINEERING (HONS)

PROGRAMMING FUNDAMENTALS
(CSC1510)

(TIME : 3 HOURS)

MATRIC NO. : | | | | | | | | | |

IC. / PASSPORT NO. : | | | | | | | | | | | | | | |

LECTURER : **P. JAYA MALATHY**

GENERAL INSTRUCTIONS

1. This question booklet consists of 8 printed pages including this page.
2. Answer **ALL questions** in Section A and Section B in the **ANSWER BOOKLET.**
3. Answer **ANY TWO (2) questions** in Section C in the **ANSWER BOOKLET.**

CONFIDENTIAL

INSTRUCTIONS: **TIME:** ***3 HOURS***

SECTION A **(30 MARKS)**

There are THREE (3) questions in this section. Answer ALL questions in the Answer Booklet.

1. Write the declaration and initialization for the following:

   a) gender of a student at a class: 'F' or 'M' only

   (2 marks)

   b) weight of bag of cement in kg: 50

   (2 marks)

   c) student marks : 88

   (2 marks)

   d) room temperature in Celcius : 37.5

   (2 marks)

   e) address of a person : "Taman Cheras Jaya"

   (2 marks)

2. Correct the errors in each of the following and rewrite the code:

   a)
```
while (c <+ 5)
        {
        product= 2 X c;
        ++c;
        }
```

   (2 marks)

   b)
```
scanf("%.4f", value);
```

   (2 marks)

   c)
```
if (gender == 1)
  printf("Woman\n");
else;
  printf("Man/n");
```

   (2 marks)

d)
```
if (age >= 65);
   printf("Age is greater than or equal to 65\n");

   printf("Age is less than 65\n");
```
(2 marks)

e)
```
switch (n)

  case 1:
printf("The number is 1\n");
  case2:
printf("The number is 2\n");
break;
  default:
printf("The number is not 1 or 2\n");
break;
```


(2 marks)

3. What is the output of the following:

a) `18%4+10%3/2`

(2 marks)

b) `10+2*2/2+3`

(2 marks)

c) `ceil(-fabs(-8 + floor(-5.5)))`

(2 marks)

d) `floor(-fabs(-8 + ceil(-5.5)))`

(2 marks)

e) `10+2*3-10/ 2`

(2 marks)

SECTION B **(30 MARKS)**

There are FIVE (5) questions in this section. Answer ALL questions in the Answer Booklet.

1. Write the function header for the following functions :

   a) Function `Hypotenuse` that takes two floating point arguments, side1 and side2, and returns a floating point result.

   (2 marks)

   b) Function `Smallest` that takes three integer arguments, x,y,z and returns an integer.

   (2 marks)

   c) Function `Instructions` that does not receive any arguments and does not return a value.

   (2 marks)

   d) Function `IntToFloat` that takes an integer argument, number, and returns a floating point result.

   (2 marks)

   e) Function `Display` that takes two floats and one integer and does not return a value.

   (2 marks)

2. Write a switch statement that will examine the value of char type called class and print one of the following messages, depending on the character value assigned to class as in the following table. Display the message "Unknown Ship Class" if the value of class is not listed in the table 1.

Class ID	Ship Class
B or b	Battleship
C or c	Cruiser
D or d	Destroyer
F or f	Frigate

Table 1

(10 marks)

3. Trace the output of the following program segment

```
char q[20]="Hello";
char s[20]="Goodbye";
printf("%d\n",strlen(q)+strlen(s));
printf("%s\n",strcat(q,s));
```

(2 marks)

4. Trace the output of the following program segment

```
char string1[10] = {'K','i','n','g',' '};
char string2[5] = {'J','o','h','n'};
printf("%s\n", string1);
printf("%s\n", string2);
strcat(string1,string2);
printf("%s\n", string1);
printf("%c\n", string1[0]);
printf("%c\n", string1[8]);
```


(6 marks)

5. Trace the output of the following program segment

```
float x[3];
  x[0]=1.4;
  x[1]=0.5;
  x[2]=2.6;

printf("%.3f\n",x[1+1]);
printf("%.3f\n",x[1+1]+4);
```

(2 marks)

SECTION C (40 MARKS)

There are THREE (3) questions in this section. Answer ANY TWO (2) questions in the Answer Booklet.

1. Write a full program to process the discount given for an accumulated purchases at Bintang Book Shop. Bintang Book Shop sells school text books and wants to give discounts to their customers. Total discount is based on the purchase price as given below:

Price	Percentage of discount given
Up to RM50.99	5%
RM 51.00 - RM 100.99	10%
RM 101.00 - RM 250.99	20%
More than RM 251.00	25%

Your program shall include the following:

- Define all related variables.
- Use looping to receive the amount purchases.
- Accumulate the total purchases and calculate the total discount amount.
- Display the total purchase, total discount and purchase amount after discount.

Design your program according to the screen interaction given below:

```
Enter Purchase Amount : RM21.20
More purchases : Y
Enter Purchase Amount : RM44.50
More purchases : N
Total Purchases RM65.70
Total Discount RM3.29
Purchase Amount After Discount RM62.41
```


(20 marks)

2. Write a full program to read 10 integers from user and store them in an array. The program should able to calculate the total value, calculate the average, and identify the largest number.

   Your program shall include the following functions:

   - A function to calculate total values: Function receives the array and return an `float` value. This function should able to sum up all values stored in the array.

   - A function to calculate the average value: Function receives the total value and return a `float` value. This function should receive result of total value and compute the average.

   - A `main()` function: able to display the information of total values and average value.

Design your program according to the screen interaction given below:

```
Enter 10 integer values:
value 1: 3
value 2: 6
value 3: 2
value 4: 4
value 5: 7
value 6: 8
value 7: 9
value 8: 12
value 9: 5
value 10:1

Total all numbers: 57
Average value: 5.7
```

(20 marks)

3. Write a full program to read the following data from the file test.dat and then manipulate the data into information to be stored in output.dat. The output.dat should contain the student Id and the average marks of the tests obtained by each student. The test.dat contains the following data :

```
StudentID   Test1   Test2   Test3
1           12.3    12.6    12.9
2            13.2    12.5    13.7
3            11.9    13.9    14.1
4            12.8    12.9    13.0
5            11.9    13.2    9.3
6            12.7    14.8    12.8
```

Print your result in the following format in output.dat.

```
StudentID   Test1   Test2   Test3   AverageMark
```

(20 marks)

***** END OF QUESTIONS *****