RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Applied Sciences
First Year - Semester I Examination – May 2022

COM 1407 – COMPUTER PROGRAMMING

Answer all questions   Time: THREE (03) hours

1

(a)   What are the phases of program development life cycle? Discuss.

(06 marks)

(b)   "Programs written in assembly language are not portable" Do you agree with this statement? Explain.

(04 marks)

(c)   Explain the program compilation process.

(06 marks)

(d)   What is the value of x in this code?

```
int x =0,i;

    for(int i=0;i<10;i++){

    if(i%2 && x++){

    x +=2; }

    }
```

(04 marks)

2

(a)   Write the output of following code segments.
i)   int main()
```
{
    int a = 20, b = 15, c = 5;
    int d;
    d = a == (b + c);
    printf("%d", d);
     return 0;
}
```

ii)
```
int main()
{
    int y=3;
    int x=5%2*7/2;
    printf(" Value of x is %d", x);
  return 0;
}
```

iii)
```
int main()
{
  int *ptr, a = 10;
  ptr = &a;
  *ptr += 1;
  printf("%d,%d/n", *ptr, a);
  return 0;
}
```

(09 marks)

(b) Write a program to calculate the cost of carpeting a rectangular room in a house.

the program must do the following:

    i.   Request the length and breadth of the room (assume they are in meters).
    ii.   Request the cost per square meter of the carpet.
    iii. Calculate the area of the room.
    iv. Calculate the cost of the carpet for the room.
    v.   Print the area and the cost

(04 marks)

(c) The do...while Statement can be used when it is required to have a loop executed at least once. Explain using an example.

(02 marks)

(d) Write a program to classify a triangle.
Get three integer values representing the sides of a triangle.
Print the values of each side.
Classify the triangles as equilateral, scalene or isosceles according to the following criteria.
- If the value of any side is negative or zero, or if the length of any side is greater than or equal to the sum of the other two it is Not a triangle
- If all sides are different, it is **Scalene**
- If two sides are equal the triangle is **isosceles**
- If three sides are equal the triangle is **equilateral.**

(05 marks)

3 (a) What's the difference between function definition and function prototype?

(04 marks)

(b) Explain break, continue, goto statements using suitable examples.

(09 marks)

(c) Write the output of following program

```
#include <stdio.h>
int main ()
{   int x, y;
   for ( x = 1; x<10; x++)
   {
      for ( y = 1; y<10; y++)
      {
         if (y == x)
            continue;
         printf ("%2i ", x );
      }
      printf ("\n");}
   return 0;
}
```
(03 marks)

(d) Differentiate functions call by value and call by reference in c. Explain using examples.

(04 marks)

4

(a) Explain why functions are important in writing a program.

(04 marks)

(b) What's the difference between function definition and function prototype?

(04 marks)

(c) Find the errors in the given program segment and re-write the statements correctly.

i.
```
#include <stdio.h>
int main () {
char grade;
printf("enter a grade:");
scanf("%c",&grade);

switch(grade) {
case 'A' :
printf("Excellent!\n" );

case 'B' :
case 'C' :
printf("Well done\n" );
Case 'D' :
printf("You passed\n" );

case 'F' :
printf("Better try again\n" );

default :
printf("Invalid grade\n" );
```

```
    printf("Your grade is %c\n", grade );
    return 0;
    }
```

ii.
```
#include <stdio.h>
void test();
void main() {
   int p = 22, q = 44;
   test();
   printf("Values in main() function p = %d and q = %d\n", p, q);
}

void test()
{

   printf("Values in test() function p = %d and q = %d\n", p, q);
}
```

(06 marks)

(d) Write array declarations for each of the following: (a)

   i.   A floating-point array of size 25
   ii. A character array of size 32.
   iii. An integer 2-dimension array (2D) of size 10*5

(06 marks)

5

(a) Write a C program to input an array with 10 elements and find the minimum value of the array. Use separate function to find the minimum value.

(06 marks)

(b) What is a pointer? Why are pointers so important in C?

(04 marks)

(c) Write a c program segment to pass a pointer as a parameter to a function.

(04 marks)

(d) Write a recursive function in C programming to print all even numbers between 1 to n.

(06 marks)

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