

University of Sargodha

M. Sc. 1st Term Exam 2017.

Subject: Information Technology Paper: Programming Fundamentals (CMP-2122)

Maximum Marks: 60

Time Allowed: 2:30 Hour

Note: Objective part is compulsory. Attempt any four questions from subjective part.

Objective Part (Compulsory)

(2*12)

- Q 1. Write short answers of the following in 2-3 lines each.
- What is preprocessor directive?
 - What are comments and how do you insert it in a C program?
 - Why we use do-while loop in C?
 - What is variable initialization and why is it important?
 - What is the Lowlevel language?
 - Describe the importance of default statement in switch statement.
 - What are syntax errors? Why does it occur?
 - What is the meaning of prototype of a function?
 - It is necessary to initialize the const variable in c?
 - Define a structure?
 - What is the advantage of an array over individual variables?
 - What does the characters "r" and "w" mean when writing programs that will make use of files?

Subjective Part (4*9)

- Q 2. Write a program that accept your age in years (type int) and then displays age in days and months.
- Q 3. Write a program that displays the following output using nested loop.
- ```

 *


```
- Q 4. Write a C program that copies the content of text file to other new file.
- Q 5. Write a program that takes 10 elements (array) from the user. Using bubblesort, sort the array in ascending order.
- Q 6. Write a C program to find factorial of a number using function recursion.
- Q 7. Write a four function calculator to perform addition, subtraction, multiplication and division that takes two operands and an operator from user. Perform this logic by using switch statement.

MSC 1st term 2017  
Subject: Information Technology

## Objective Part

i) What is Preprocessor Directive?

Preprocessor directive is an instruction given to the compiler before the execution of program. The Preprocessor directive start with hash symbol (#) and then keyword include or define. These directives are written at the start of program.

```
#include <stdio.h>
```

ii) What are comments and how do you insert in a C program?

Comments are the lines of program that are not executed. The compiler ignore comment and not include in executable file comments insert in C to explain the purpose of code.

iii) Why we use Do-while loop?

A statement or set of statement that execute repeatedly through any loop. This loop execute one or more statement while given condition is true.



iv) What is variable initialization and why is it Important?

The process of assigning a value to a variable at the time declaration is known as variable initialization.

The equal sign = is used to initialize a variable.

```
int n = 100;
```

```
int x = 20;
```

If number is given in program we always declare and initialize a variable.

v) What is Low Level Language?

Low level language is near to computer and far from human language.

Program written in high level language and compiler convert into machine language that is type of low-level-language.

vi) Describe the importance of default statement in switch statement?

See on page 4

vii) What are syntax error? why does it occur?

See on page 3

viii) What is the meaning of prototype of a function?

See on page 4

ix) It is necessary to initialize the Const variable in C?

Assignment to a Const variable in the program is not allowed because then you may change its value which is obviously wrong. When a variable is declared const it means that, variable is read only, and can't be change.

x) Define a Structure?

See on page 5

xi) What is the advantage of array over individual variable?

When storing multiple related data, it is good idea to use array. If store 10 student name we use only one array variable and store easily 10 student name. We cannot use easily 10 variable in one program so array is good concept of individual variable.

xi) What does the character "r" and "w" mean when writing program that will make use of file?

I ~~KNOW~~ KNOW

Character "r" mean read in file

Character "w" mean write in file

## Subjective Part

Q2. Write a program that accept your age in year (type int) and then display age in days and month.

```
#include<stdio.h>
int main()
{
 int age,days,month;
 printf("enter your age in year (Tusan kitny saal dy hoo)");
 scanf("%d",&age);
 days=age*365;
 month=age*12;
 printf("your age in days are %d (Tusadi umer %d din a)\n",days,days);
 printf("your age in month are %d (tusadi umer %d maheny a)",month,month);
 return 0;
}
```

Q3. Write a program that display the following output using nested loop.

```
*


```

```
#include<stdio.h>
int main()
{
 int i,j;
 for(i=1; i<=4; i++)
 {
 for(j=1; j<=7; j++)
 {
 if(j>=5-i && j<=3+i)
 printf("*");
 else
 printf(" ");
 }
 printf("\n");
 }
 return 0;
}
```

**Q4. Write a program that copies the content of text file to other new file.**

```
#include<stdio.h>
int main()
{
 FILE *ptr=fopen("myfile.txt","r");
 int a=40;
 fscanf(ptr,"%d",&a);
 printf("%d",a);
 fclose(ptr);

 ptr=fopen("mynewfile.txt","w");
 fprintf(ptr,"%d",a);
 fclose(ptr);
}
```

**Q5. Write a program that take 10 element (array) from the user. Using bubble sort, sort the array in ascending order.**

```
#include<stdio.h>
int main()
{
 int i,j,a[10],temp;

 printf("enter a number");
 for(i=0; i<=9; i++)
 {
 scanf("%d",&a[i]);
 }

 for(i=0; i<=9; i++)
 {
 for(j=i+1; j<=9; j++)
 {
 if(a[i]>a[j])
 {
 temp=a[i];
 a[i]=a[j];
 a[j]=temp;
 }
 }
 }

 printf("number in accending order are\n");
}
```

```

 for(i=0; i<=9; i++)
 {
 printf("%d\n",a[i]);
 }
 return 0;
}

```

**Q6. Write a C program to find factorial of a number using function recursion.**

```

#include<stdio.h>
int factorial(int);
int main()
{
 int n;
 int f;
 printf("Enter an integer to find its factorial\n");
 scanf("%d", &n);

 if (n < 0)
 printf("Factorial of negative integers isn't defined.\n");
 else
 {
 f = factorial(n);
 printf("%d! = %d\n", n, f);
 }

 return 0;
}

int factorial(int n)
{
 if (n == 0)
 return 1;
 else
 return(n * factorial(n-1));
}

```

**Q7. Write a four function calculator to perform addition, subtraction, multiplication and division that take two operand and an operator from user. Perform this logic by using switch statement.**

```

#include<stdio.h>
int Add(int x,int y);
int Mul(int x,int y);
int Sub(int x,int y);
float Div(int x,int y);

```

```

int main()
{
 int a,b;
 printf("enter two number");
 scanf("%d%d",&a,&b);
 printf("Sum is %d\n",Add(a,b));
 printf("Multiply is %d\n",Mul(a,b));
 printf("Subtraction is %d\n",Sub(a,b));
 printf("Divison is %.2f\n",Div(a,b));
}
int Add(int x,int y)
{
 int sum;
 sum=x+y;
 return sum;
}
int Mul(int x,int y)
{
 int mul;
 mul=x*y;
 return mul;
}
int Sub(int x,int y)
{
 int sub;
 sub=x-y;
 return sub;
}
float Div(int x,int y)
{
 int div;
 div=x/y;
 return div;
}

```

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