University of Sargodha
Paper: Programming Fundamental (Retake)

Time Allowed: 2: 00 Hour   Maximum Marks: 60

Objective Part

I) Write short answers of the following questions.   (10*2)

I.   Differentiate between **for** and **while** loop?

II.   What is run time error?

III.   Differentiate between high level and machine level language?

IV.   What is a variable? How to declare a legal variable in C program?

V.   What is preprocessor directive?

VI.   Define a bug.

VII.   What is keyword? Also, give an example.

VIII.   What are control statements? Give its example.

IX.   What is nested loop?

X.   Differentiate between prefix and postfix increment operator.

Subjective Part   (10*4)

2) Write a program that inputs a number from the user and displays a table of that number using **while** loop.

3) Write a program that inputs a character from user and checks whether it is a vowel or consonant.

4) Write a program of insertion sort and also apply insertion sort for this array.[9,5,6,0,10].

5) Write a program to calculate the **net pay** of an employee. Input the **basic pay**, pass the basic pay to the user define function **paycalculate()**. Calculate the net pay and return to main function, calculate the net pay of an employee:

- House rent is 43% of the basic.

- Medical allowance is 3% of basic pay if basic pay is greater than Rs.7000/-. It is 5% of basic pay if the basic pay is less or equal than Rs.7000/-

- Conveyance allowance is Rs.96/- if basic pay is less or equal Rs.7000/-. It is Rs.193/- if the basic pay is more than Rs.7000/-

- Net pay is calculated by adding basic pay, medical allowance, and house rent

Programming Fundamental
(Retake)

Objective Part :

i) Differentiate b/w for and while loop ?

* For loop execute one or more statement for a specified number of time. This loop is also called counter-controlled loop. Most Programmer used this loop.

* While loop is the simplest loop of c language. This loop execute one or more statement while the given condition is true.

ii) What is run time error ?

A type of error that occurs during the execution of program is know as run-time-error.

They occur when wrong input from user.

iii) Differentiate b/w high level and Machine language?

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

Machine language is near to computer and far from human.

High level language

Program written in cannot execute directly. The compiler convert into machine language.

Computer understand easily machine language.

iv) What is Variable? How to declare a legal variable in C Language?

See on Page 1

v) What is Preprocessor directive?

See on Page 7

vi) Define a bug.

An error in computer program is called bug. The programmer can make different error while writing program.

vii) What is ~~bug~~ keyword? Also, give an Example.

Keyword is a word in C language that has predefined meaning and purpose. The keyword cannot be changed by the user. Keyword written in lowercase.

Example:-

int, float, return, default, goto etc

Total number of keyword is 32.

viii) What is control statement? Give example.

Control statement unable us to specify the flow of program control. The order in which the instruction in a program must be executed. They make it possible to make decision, to perform task repeatedly or to jump from one section of code to another.

ix) What is nested loop?

A loop within a loop is called nested loop. In nested loops, the inner loop is executed completely with each change in the value of counter variable of outer loop.

x) Differentiate b/w prefix and postfix increment operator.

See on page 3

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1) What is the Purpose of default statement in Switch statement?

Default statement is used in switch statement. Default statement is executed when all the case is false. ~~then~~ for example

```
switch (expression)
{

    Case 1:
        statement;
    Case 2:
        stateme;
    Case 3:
        statement;
    default
    statement
}
```

Q2. Write a program that input number from user and display a table of that number using while loop.

```c
#include<stdio.h>
int main()
{
        int num,n=1,p;
        printf("enter a number");
        scanf("%d",&num);
        while(n<=10)
        {
                p=num*n;
                printf("%d*%d=%d\n",num,n,p);
                n++;
        }
        return 0;
}
```

Q3. Write a program that input character from user and checks whether it is vowel or consonant.

```c
#include<stdio.h>
int main()
{
        char ch;
        printf("enter a character");
        scanf("%c",&ch);
        if(ch=='A' || ch=='a' || ch=='E' || ch=='e' || ch=='I' || ch=='i' || ch=='O' || ch=='o' || ch=='U' ||
        ch=='u')
        {
                printf("you enter a vowel");
        }
        else
        printf("you enter a consonant");

        return 0;
}
```

Q4. Write a program of insertion sort and also apply insertion sort for this array [9,5,6,0,10].

```c
#include<stdio.h>
int main()
{
        int a[5]={9,5,6,0,10};
        int temp;
        printf("Before sorting\n");
        for(int i=0; i<=4; i++)
        {
                printf("%d\t",a[i]);
        }
```

```c
        for(int i=0; i<=4; i++)
        {
                for(int j=i+1; j<=4; j++)
                {
                        if(a[i]>a[j])
                        {
                                temp=a[i];
                                a[i]=a[j];
                                a[j]=temp;
                        }
                }
        }
        printf("\nafter sorting\n");
        for(int i=0; i<=4; i++)
        {
                printf("%d\t",a[i]);
        }
        return 0;
}
```

Q5.   ??**?**

```c
#include<stdio.h>
double paycalculate(double bpay,double rent,double m_al,double con_al);
int main()
{
        double bpay,rent,m_al,con_al;
        printf("enter your basic pay");
        scanf("%d",&bpay);
        double ans=paycalculate(bpay, rent, m_al, con_al);
        printf("your netpay is %d",ans);
}
double paycalculate(double bpay,double rent, double m_al,double con_al)
{
        rent=43*bpay/100;
        if(bpay<=7000)
        {
                m_al=5*bpay/100;
                con_al=96;
        }
```

```
else
{
        m_al=3*bpay/100;
        con_al=193;
}
double netpay=bpay+ m_al+ rent;
return netpay;
}
```

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