MAHARAJA SURAJMAL INSTITUTE

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DEPARTMENT OF COMPUTER APPLICATIONS

C LANGUAGE

Practical File

Subject Code – BCA 171

SUBMITTED BY	SUBMITTED TO
Aman Tripathi	**Mrs Minal Dhankar**
05221202021	**Asst. Professor. MSI**
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Practical 1

Code:-

```c
**
 * C program to calculate total, average and percentage of five subjects
 */


#include <stdio.h>


int main()
{

    float eng, phy, chem, math, comp;

    float total, average, percentage;


    /* Input marks of all five subjects */

    printf("Enter marks of five subjects: \n");

    scanf("%f%f%f%f%f", &eng, &phy, &chem, &math, &comp);


    /* Calculate total, average and percentage */

    total = eng + phy + chem + math + comp;

    average = total / 5.0;

    percentage = (total / 500.0) * 100;


    /* Print all results */

    printf("Total marks = %.2f\n", total);

    printf("Average marks = %.2f\n", average);

    printf("Percentage = %.2f", percentage);
```

```
    return 0;

}
```

Output:-

```
Enter marks of five subjects:
95
76
85
90
89
Total marks = 435.00
Average marks = 87.00
Percentage = 87.00
```

Practical 2

Code:-

```c
/* C Program to convert input distance in meter, feet, inches, centimeter */

#include <stdio.h>

#include <conio.h>


int main() {

int distance;

float meter, feet, inches, centimeter;


printf("Enter the distance [in Kilometers]: ");

scanf("%d", & distance);


meter = distance * 1000;

feet = distance * 3280.84;

inches = distance * 39370.1;

centimeter = distance * 100000;


printf("Meter = %f\n", meter);

printf("Feet = %f\n", feet);

printf("Inches = %f\n", inches);

printf("Centimeters = %f\n", centimeter);


getch();

}
```

Output:-

```
Enter the distance [in Kilometers]: 520
Meter = 520000.000000
Feet = 1706036.750000
Inches = 20472452.000000
Centimeters = 52000000.000000
>
```

Practical 3

Code:-

```c
#include <stdio.h>

void main()

{

    int fahrenheit = 0;

    int celsius = 0;

    printf("Enter the Temperature in Fahrenheit: ");

    scanf("%d", &fahrenheit);

    celsius = ((fahrenheit - 32) * 5) / 9;

    printf("The Temperature in Celsius %d.", celsius);

}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Ama
ical_3 } ; if ($?) { .\Practical_3 }
Enter the Temperature in Fahrenheit: 56
The Temperature in Celsius 13.
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 4

Code:-

```c
#include <stdio.h>

void main()

{

    int principal, year;

    float rate, simpleInterest;

    for (int i = 0; i < 3; i++)

    { // for loop

        printf("Enter the Value of Principle ,Year and rate\n");

        scanf("%d%d%f", &principal, &year, &rate);

        simpleInterest = (principal * rate * year) / 100;

        printf("%f\n", simpleInterest);

    }

}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
ical_4 } ; if ($?) { .\Practical_4 }
Enter the Value of Principle ,Year and rate
232
12
32
890.880005
Enter the Value of Principle ,Year and rate
231
23
12
637.559998
Enter the Value of Principle ,Year and rate
56541
23
65
845287.937500
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 5

Code:-

```c
/*
 * C Program to Print the Range
 */
#include <stdio.h>
#define SIZE(x) sizeof(x)*8

void signed_one(int);
void unsigned_one(int);

void main()
{
    printf("\nrange of int");
    signed_one(SIZE(int));
    printf("\nrange of unsigned int");
    unsigned_one(SIZE(unsigned int));
    printf("\nrange of char");
    signed_one(SIZE(char));
    printf("\nrange of unsigned char");
    unsigned_one(SIZE(unsigned char));
    printf("\nrange of short");
    signed_one(SIZE(short));
    printf("\nrange of unsigned short");
    unsigned_one(SIZE(unsigned short));


}
/* RETURNS THE RANGE SIGNED*/
void signed_one(int count)
{
```

```c
    int min, max, pro;

    pro = 1;

    while (count != 1)

    {

        pro = pro << 1;

        count--;

    }

    min = ~pro;

    min = min + 1;

    max = pro - 1;

    printf("\n%d to %d", min, max);

}
/* RETURNS THE RANGE UNSIGNED */
void unsigned_one(int count)
{

    unsigned int min, max, pro = 1;


    while (count != 0)

    {

        pro = pro << 1;

        count--;

    }

    min = 0;

    max = pro - 1;

    printf("\n%u to %u", min, max);

}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Am
ical_5 } ; if ($?) { .\Practical_5 }

range of int
-2147483648 to 2147483647
range of unsigned int
0 to 4294967295
range of char
-128 to 127
range of unsigned char
0 to 255
range of short
-32768 to 32767
range of unsigned short
0 to 65535
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 6

Code:-

```c
/* Program to convert a positive decimal number to Binary, Octal or Hexadecimal */



#include<stdio.h>
void convert(int, int);


int main()
{
        int num;
        printf("Enter a positive decimal number : ");
        scanf("%d", &num);
        printf("\nBinary number :: ");
        convert(num, 2);
        printf("\n");
        printf("\nOctal number :: ");
        convert(num, 8);
        printf("\n");
        printf("\nHexadecimal number :: ");
        convert(num, 16);
        printf("\n");


        return 0;
}/*End of main()*/


void convert (int num, int base)
{
        int rem = num%base;
```

```c
	if(num==0)

		return;

	convert(num/base, base);



	if(rem < 10)

		printf("%d", rem);

	else

		printf("%c", rem-10+'A' );
}/*End of convert()*/
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users
ical_6 } ; if ($?) { .\Practical_6 }
Enter a positive decimal number : 12

Binary number :: 1100

Octal number :: 14

Hexadecimal number :: C
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 7

Code:-

```c
#include <stdio.h>

// #include <stdlib.h>

int main()
{

    int a = 10, b = 20;

    printf("Before swap a=%d b=%d", a, b);

    a = a * b; // a=200 (10*20)

    b = a / b; // b=10 (200/20)

    a = a / b; // a=20 (200/10)

   // system("cls");

    printf("\nAfter swap a=%d b=%d", a, b);

    return 0;

}
```

Output:-

```
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\
ical_7 } ; if ($?) { .\Practical_7 }
Before swap a=10 b=20
After swap a=20 b=10
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 8

Code:-

```c
#include<stdio.h>


int main()
{
    int var = 128;


    printf("var/2  =%d \n",var>>1); //1 position to right

    printf("var/4  =%d \n",var>>2); //2 position to right

    printf("var/8  =%d \n",var>>3); //3 position to right

    printf("var/16 =%d \n",var>>4); //4 position to right

    printf("var/32 =%d \n",var>>5); //5 position to right



    return 0;

}
```

Output:-

```
Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\
ical_8 } ; if ($?) { .\Practical_8 }
var/2  =64
var/4  =32
var/8  =16
var/16 =8
var/32 =4
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 9

Code:-

```c
#include <stdio.h>

#include <conio.h>

void main()

{

    int i = 1;

    printf("\nSquare of 1 to 10 Numbers :\n");

    while (i <= 10)

    {

        printf("\n%d : %d", i, i * i);

        i = i + 1;

    }

    getch();

}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Amar
ical_9 } ; if ($?) { .\Practical_9 }

Square of 1 to 10 Numbers :

1 : 1
2 : 4
3 : 9
4 : 16
5 : 25
6 : 36
7 : 49
8 : 64
9 : 81
10 : 100
```

Practical 10

Code:-

```c
#include <stdio.h>

void main()
{
    int number = 0;
    printf("Enter the Number to find factor: ");
    scanf("%d", &number);
    printf("\n");
    printf("Factors: ");
    for (int i = 1; i <= number; i++)
    {
        if (number % i == 0)
        {
            printf("%d  ", i);
        }
    }
}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
tical_10 } ; if ($?) { .\Practical_10 }
Enter the Number to find factor: 56

Factors: 1  2  4  7  8  14  28  56
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> █
```

Practical 11

Code:-

```c
#include <stdio.h>

void main()

{

    int num1 = 0;

    int num2 = 0;

    int num3 = 0;

    printf("Enter the value of Num1 Num2 Num3 :-\n");

    scanf("%d\n%d\n%d", &num1, &num2, &num3);

    if (num1 >= num2 && num1 >= num3)

    {

        printf("Greatest Number is %d.", num1);

    }

    else if (num2 >= num1 && num2 >= num3)

    {

        printf("Greatest Number is %d.", num2);

    }

    else if (num3 >= num1 && num3 >= num2)

    {

        printf("Greatest Number is %d.", num3);

    }

}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
tical_11 } ; if ($?) { .\Practical_11 }
Enter the value of Num1 Num2 Num3 :-
12
23
6
Greatest Number is 23.
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 12

Code:-

```c
#include <stdio.h>

void main()
{
    int a, b, c, big;

    printf("Enter three numbers : \n");

    scanf("%d %d %d", &a, &b, &c);

    big = a > b ? (a > c ? a : c) : (b > c ? b : c);

    printf("\nThe biggest number is : %d", big);
}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
tical_12 } ; if ($?) { .\Practical_12 }
Enter three numbers :
23
65
63

The biggest number is : 65
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 13

Code:-

```c
#include <stdio.h>

void main()

{

    int N = 0;

    printf("How Many Number you want to check:- ");

    scanf("%d", &N);

    for (int i = 1; i <= N; i++)

    {

        float number;

        printf("Enter the value for Number %d:- ", i);

        scanf("%f", &number);

        float recip = (1 / number);

        printf("The Reciprocal of Number entered by you is:%0.2f.\n", recip);

    }

}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
tical_13 } ; if ($?) { .\Practical_13 }
How Many Number you want to check:- 1
Enter the value for Number 1:- 23
The Reciprocal of Number entered by you is:0.04.
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 14

Code:-

```c
//     *
//    ***
//   *****
//  *******
// *********

#include <stdio.h>
int main()
{
    int rows;
    printf("Enter the Value of rows: ");
    scanf("%d", &rows);
    for (int i = 1; i <= rows; i++)
    {

        for (int space = 1; space <= (rows - i); space++)
        {
            printf(" ");
        }

        for (int star = 1; star <= (2 * i - 1); star++)
        {
            printf("*");
        }
        printf("\n");
    }

    return 0;
```

```
}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\
actical_14_a } ; if ($?) { .\Practical_14_a }
Enter the Value of rows: 5
     *
    ***
   *****
  *******
 *********
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Code:-

```c
//    *
//   **
//  ***
// ****
//*****


#include <stdio.h>
int main()
{
    int rows;
    printf("Enter the Value of rows: ");
    scanf("%d", &rows);
    for (int i = 1; i <= rows; i++)
    {
        int space;
        for (space = 1; space <= (rows - i); space++)
        {
```

```c
        printf(" ");

    }


    for (int star = 0; star <= (5 - space); star++)

    {

        printf("*");

    }

    printf("\n");

  }


    return 0;

}
```

Output:-


```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users
rctical_14_b } ; if ($?) { .\Parctical_14_b }
Enter the Value of rows: 5
    *
   **
  ***
 ****
*****
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Code:-

```
//*

//**

//***

//****

//*****
```

```c
#include <stdio.h>

int main()
{

    int rows;

    printf("Enter the Value of rows: ");

    scanf("%d", &rows);

    for (int i = 1; i <= rows; i++)

    {

        for (int star = 1; star <= i; star++)

        {

            printf("*");

        }

        printf("\n");

    }


    return 0;

}
```

Output:-

Code:-

```c
//*********
// *******
//   *****
//    ***
//     *


#include <stdio.h>
void main(){
    int rows;
    printf("Enter the Value of rows: ");
    scanf("%d",&rows);
    for (int i = rows; i >= 1; i--)
    {
        for(int space=1;space<=rows-i;space++){
            printf(" ");
        }
        for (int  j = 1; j <= 2*i-1; j++)
        {
            printf("*");
        }
        printf("\n");


    }


}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\
actical_14_d } ; if ($?) { .\Practical_14_d }
Enter the Value of rows: 5
*********
 *******
  *****
   ***
    *
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Code:-

```c
//      *
//     ***
//    *****
//   *******
//  *********
//   *******
//    *****
//     ***
//      *

#include <stdio.h>

int main()
{
    int rows;
    printf("Enter the Value of rows: ");
    scanf("%d", &rows);
    for (int i = 1; i <= rows; i++)
    {
```

```c
        for (int space = 1; space <= (rows - i); space++)

        {

            printf(" ");

        }


        for (int star = 1; star <= (2 * i - 1); star++)

        {

            printf("*");

        }
        printf("\n");

    }
    for (int i = rows - 1; i >= 1; i--)

    {

        for (int space = 1; space <= rows - i; space++)

        {

            printf(" ");

        }
        for (int j = 1; j <= 2 * i - 1; j++)

        {

            printf("*");

        }
        printf("\n");

    }


    return 0;

}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\
actical_14_e } ; if ($?) { .\Practical_14_e }
Enter the Value of rows: 5
     *
    ***
   *****
  *******
*********
  *******
   *****
    ***
     *
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 15

Code:-

```c
#include <stdio.h>


void main(){

    int num;

    int reverse= 0;

    printf("Enter the number for reverse\n");

    scanf("%d",&num);

    while (num>0)

    {

        int d = num%10;

        reverse = reverse*10+d;

    num = num/10;

    }

    printf("Reverse Number is %d ",reverse);



}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman
tical_15 } ; if ($?) { .\Practical_15 }
Enter the number for reverse
26543236
Reverse Number is 63234562
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 16

Code:-

```c
// Check the Entered number is character or Special char or number

#include <stdio.h>

void main()

{

    char ch = ' ';

    printf("Enter the Character for check:-");

    scanf("%c", &ch);

    if (ch >= 97 && ch <= 122)

    {

        printf("The Entered Character is Small Alphabet.");

    }

    else if (ch >= 65 && ch <= 90)

    {

        printf("The Entered Character is Capital Alphabet.");

    }

    else if (ch >= 32 && ch <= 47 || ch >= 58 && ch <= 64 || ch >= 91 && ch <= 96 || ch >=
123 && ch <= 126)

    {

        printf("The Entered Character is Special Character.");

    }

    else if (ch >= 0 && ch <= 255)

    {

        printf("The Entered Character is Number.");

    }

    else{

        printf("Wrong Input");

    }

}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
tical_16 } ; if ($?) { .\Practical_16 }
Enter the Character for check:-32
The Entered Character is Number.
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
tical_16 } ; if ($?) { .\Practical_16 }
Enter the Character for check:-@
The Entered Character is Special Character.
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
tical_16 } ; if ($?) { .\Practical_16 }
Enter the Character for check:-a
The Entered Character is Small Alphabet.
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
tical_16 } ; if ($?) { .\Practical_16 }
Enter the Character for check:-A
The Entered Character is Capital Alphabet.
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 17

Code:-

```c
#include <stdio.h>

void funA();

void funB();

void funC();

void funD();

void main()

{

    printf("Hey from main function\n");

    funA();
}

void funA()

{

    printf("Hey from function A \n");

    funB();
}
```

```c
void funB()

{

    printf("Hey from function B \n");

    funC();
}


void funC()

{

    printf("Hey from function C \n");

    funD();
}

void funD()

{

    printf("Hey from function D \n");
}


/*


OUTPUT:


Hey from main function


Hey from function A
```

```
Hey from function B


Hey from function C


Hey from function D


*/
```

Output:-


```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
tical_17 } ; if ($?) { .\Practical_17 }
Hey from main function
Hey from function A
Hey from function B
Hey from function C
Hey from function D
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 18

Code:-

```c
#include <stdio.h>

#include <stdlib.h>

biggestNumber(int, int, int); // function prototype

int main()

{


    int a, b, c;

    printf("Enter the three numbers\n");

    scanf("%d%d%d", &a, &b, &c);

    // read the numbers from user

    int result = biggestNumber(a, b, c); // function call

    printf("Biggest number is: %d\n", result);

    // display the output on the screen

    getch();

    return 0;

}
int biggestNumber(int a, int b, int c)

{ // function definition with parameter

    if (a > b)

    {

        if (a > c)

            return a;

        else

            return c;

    }

    else

    {

        if (b > c)
```

```
            return b;

        else

            return c;

    }

}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
tical_18 } ; if ($?) { .\Practical_18 }
Enter the three numbers
56
62
59
Biggest number is: 62
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 19

Code:-

```c
#include <stdio.h>

int prime(int num);

void main()
{

    int number = 0;

    printf("Enter the Number to check");

    scanf("%d", &number);

    int check = prime(number);

    if (check == 0)

    {

        printf("Not a Prime Number");

    }

    else

    {

        printf("Prime Number");

    }

}
int prime(int num)
{

    int c = 0;

    if (num == 0 || num == 1)

        return 0;

    for (int i = 1; i <= num; i++)

    {

        if (num % i == 0)

            c++;

    }

    if (c == 2)
```

```
    {
        return 1;
    }

    else

        return 0;

}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users
tical_19 } ; if ($?) { .\Practical_19 }
Enter the Number to check: 23
Prime Number
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users
tical_19 } ; if ($?) { .\Practical_19 }
Enter the Number to check: 26
Not a Prime Number
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 20

Code:-

```c
#include <stdio.h>

int main()
{
    int i, a = 1, count;

    while (a <= 100)
    {
        count = 0;
        i = 2;
        while (i <= a / 2)
        {
            if (a % i == 0)
            {
                count++;
                break;
            }
            i++;
        }
        if (count == 0 && a != 1)
        {
            printf(" %d ", a);
        }
        a++;
    }
    return 0;
}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman Tripathi\OneDrive\Desktop\C Lab\" ;
tical_20 } ; if ($?) { .\Practical_20 }
 2  3  5  7  11  13  17  19  23  29  31  37  41  43  47  53  59  61  67  71  73  79  83  89  97
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 21

Code:-

```c
#include <stdio.h>

int hcf(int x, int y);

void main()
{
    int a, b, d;

    printf("Enter 2 Numbers : ");

    scanf("%d%d", &a, &b);

    if (a > b)

    {

        d = hcf(a, b);

    }

    else

    {

        d = hcf(b, a);

    }

    printf("HCF : %d", d);

}
int hcf(int x, int y)
{

    int r = 1;

    while (r != 0)

    {

        r = x % y;

        x = y;

        y = r;

    }

    return (x);

}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\
tical_21 } ; if ($?) { .\Practical_21 }
Enter 2 Numbers : 96
56
HCF : 8
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 22

Code:-

```c
// Multiplication of a matrix

#include <stdio.h>



void enterData(int firstMatrix[][10], int secondMatrix[][10], int rowFirst, int columnFirst,
int rowSecond, int columnSecond);

void multiplyMatrices(int firstMatrix[][10], int secondMatrix[][10], int multResult[][10],
int rowFirst, int columnFirst, int rowSecond, int columnSecond);

void display(int mult[][10], int rowFirst, int columnSecond);



int main()

{

    int firstMatrix[10][10], secondMatrix[10][10], mult[10][10], rowFirst, columnFirst,
rowSecond, columnSecond, i, j, k;



    printf("Enter rows and column for first matrix: ");

    scanf("%d %d", &rowFirst, &columnFirst);



    printf("Enter rows and column for second matrix: ");

    scanf("%d %d", &rowSecond, &columnSecond);
```

```c
    // If colum of first matrix in not equal to row of second matrix, asking user to enter
the size of matrix again.

    while (columnFirst != rowSecond)

    {

        printf("Error! column of first matrix not equal to row of second.\n");

        printf("Enter rows and column for first matrix: ");

        scanf("%d%d", &rowFirst, &columnFirst);

        printf("Enter rows and column for second matrix: ");

        scanf("%d%d", &rowSecond, &columnSecond);

    }


    // Function to take matrices data

    enterData(firstMatrix, secondMatrix, rowFirst, columnFirst, rowSecond, columnSecond);



    // Function to multiply two matrices.

    multiplyMatrices(firstMatrix, secondMatrix, mult, rowFirst, columnFirst, rowSecond,
columnSecond);



    // Function to display resultant matrix after multiplication.

    display(mult, rowFirst, columnSecond);



    return 0;

}
```

```c
void enterData(int firstMatrix[][10], int secondMatrix[][10], int rowFirst, int columnFirst,
int rowSecond, int columnSecond)

{

    int i, j;

    printf("\nEnter elements of matrix 1:\n");

    for (i = 0; i < rowFirst; ++i)

    {

        for (j = 0; j < columnFirst; ++j)

        {

            printf("Enter elements a%d%d: ", i + 1, j + 1);

            scanf("%d", &firstMatrix[i][j]);

        }

    }


    printf("\nEnter elements of matrix 2:\n");

    for (i = 0; i < rowSecond; ++i)

    {

        for (j = 0; j < columnSecond; ++j)

        {

            printf("Enter elements b%d%d: ", i + 1, j + 1);

            scanf("%d", &secondMatrix[i][j]);

        }

    }
```

```c
}


void multiplyMatrices(int firstMatrix[][10], int secondMatrix[][10], int mult[][10], int
rowFirst, int columnFirst, int rowSecond, int columnSecond)

{

    int i, j, k;


    // Initializing elements of matrix mult to 0.

    for (i = 0; i < rowFirst; ++i)

    {

        for (j = 0; j < columnSecond; ++j)

        {

            mult[i][j] = 0;

        }

    }


    // Multiplying matrix firstMatrix and secondMatrix and storing in array mult.

    for (i = 0; i < rowFirst; ++i)

    {

        for (j = 0; j < columnSecond; ++j)

        {

            for (k = 0; k < columnFirst; ++k)

            {
```

```c
                mult[i][j] += firstMatrix[i][k] * secondMatrix[k][j];

        }

    }

}


void display(int mult[][10], int rowFirst, int columnSecond)

{

    int i, j;

    printf("\nOutput Matrix:\n");

    for (i = 0; i < rowFirst; ++i)

    {

        for (j = 0; j < columnSecond; ++j)

        {

            printf("%d  ", mult[i][j]);

            if (j == columnSecond - 1)

                printf("\n\n");

        }

    }

}
```

Output:-

```
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman Tripat
tical_22 } ; if ($?) { .\Practical_22 }
Enter rows and column for first matrix: 5
5
Enter rows and column for second matrix: 5
5

Enter elements of matrix 1:
Enter elements a11: 5
Enter elements a12: 5
Enter elements a13: 5
Enter elements a14: 5
Enter elements a15: 5
Enter elements a21: 5
Enter elements a22: 5
Enter elements a23: 5
Enter elements a24: 5
Enter elements a25: 5
Enter elements a31: 5
Enter elements a32: 5
Enter elements a33: 5
Enter elements a34: 5
Enter elements a35: 5
Enter elements a41: 5
Enter elements a42: 5
Enter elements a43: 5
Enter elements a44: 5
Enter elements a45: 5
Enter elements a51: 5
Enter elements a52: 5
Enter elements a53: 5
Enter elements a54: 5
Enter elements a55: 5

Enter elements of matrix 2:
Enter elements b11: 5
Enter elements b12: 5
Enter elements b13: 5
Enter elements b14:
5
Enter elements b15: 5
Enter elements b21: 5
Enter elements b22: 5
Enter elements b23: 5
Enter elements b24: 5
Enter elements b25: 5
Enter elements b31: 5
Enter elements b32: 5
Enter elements b33: 55
Enter elements b34: 5
Enter elements b35: 5
Enter elements b41: 5
Enter elements b42: 5
Enter elements b43: 5
Enter elements b44: 5
Enter elements b45: 5
Enter elements b51: 5
Enter elements b52: 5
Enter elements b53: 5
Enter elements b54: 5
Enter elements b55: 5

Output Matrix:
125  125  375  125  125

125  125  375  125  125

125  125  375  125  125

125  125  375  125  125

125  125  375  125  125
```

Practical 23

Code:-

```c
#include<stdio.h>

#include<conio.h>

#include<stdlib.h>

#define ARRAY_SIZE 15

int leng(char *ipstr)

{

    int i=0,length=0;

    for(i=0;ipstr[i]!='\0';i++)

    {

        length++;

    }

    return length;

}


char *concat(char *str1,char *str2)

{

    int leng1=0,leng2=0,i=0,j=0;



    leng1=leng(str1);

    leng2=leng(str2);

    for(i=leng1;str2[j]!='\0';i++,j++)

    {

        str1[i]=str2[j];

    }

    str1[i]='\0';

    return str1;

}
```

```c
int compare(char *str1,char *str2)

{

    int leng1=0,leng2=0,i=0,count=0;

    leng1=leng(str1);

    leng2=leng(str2);

    if(leng1==leng2)

    {

        for(i=0;i<leng1;i++)

        {

            if(str1[i]!=str2[i])

            {

                return -1;

            }

            else

            {

                count++;

            }

        }

        if(count==leng1)

        {

            return 0;

        }

    }

    else

    {


        return leng1-leng2;

    }

}

char *reverse(char *str1)

{

    int leng1=0,i=0,j=0,midleng;
```

```c
        char temp;

    leng1=leng(str1);

    j=leng1-1;

    midleng=leng1/2;

    for(i=0;i<midleng;i++)

    {

        temp=str1[i];

        str1[i]=str1[j];

        str1[j]=temp;

        j=j-1;

    }

    return str1;

}

int main()

{

    char str1[ARRAY_SIZE],str2[ARRAY_SIZE],*resultstr;

    int length=0,i=0,choice=0,result=-99;

    printf("\n\n\tChoose the operation you need to perform...");

printf("\n\n\t1.StringLength\n\t2.StringReverse\n\t3.StringConcatenation\n\t4.StringCompare\
n\n\tYour Choice(in numbers) : ");

    scanf("%d",&choice);

    switch(choice)

    {

                case 1:

                    // clrscr();

                        printf("\n\n\tEnter the input string\n\n\t");

                        scanf("%s",&str1);

                        length=leng(str1);

                        printf("\n\n\t The length of the string is %d",length);

                        break;

                case 2:

                    // clrscr();
```

```c
			printf("\n\n\tEnter the input string\n\n\t");

			scanf("%s",&str1);

		// char *newstr=(char*) malloc(10*sizeof(char));

			resultstr=reverse(str1);

			printf("\n\n\t The reversed string is %s",resultstr);

			break;

		case 3:

			//clrscr();

			printf("\n\n\tEnter two input strings\n\n\t");

			scanf("%s %s",&str1,&str2);

			resultstr=concat(str1,str2);

			printf("\n\n\t The concatenated string is %s",resultstr);

			break;

		case 4:

			//clrscr();

			printf("\n\n\tEnter two input strings\n\n\t");

			scanf("%s %s",&str1,&str2);

			result=compare(str1,str2);

			printf("\n\n\t The result is %d",result);

			break;

	}

  getch();

}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Am
tical_23 } ; if ($?) { .\Practical_23 }


        Choose the operation you need to perform...

        1.StringLength
        2.StringReverse
        3.StringConcatenation
        4.StringCompare

        Your Choice(in numbers) : 3


        Enter two input strings

        rerefd
hhjh


        The concatenated string is rerefdhhjh
```

Practical 24

Code:-

```c
#include <stdio.h>

#include <string.h>

struct bill

{

    int id;

    char address[200];

    float amount;

} p1, p2;

int main()

{

    printf("Accessing members of structure!\n\n");

    p1.id = 1;

    strcpy(p1.address, "Sector 41B, Market Complex, City: Siliguri, State: West Bengal");

    p1.amount = 5689.36;

    printf("Details of First Person!\n");

    printf("Id of first person is: %d\n", p1.id);

    printf("Amount due by first person is: %f\n", p1.amount);

    printf("Address of first person is: %s\n", p1.address);

    p2.id = 2;

    strcpy(p2.address, "Sector 43B, Road No-06, Market Complex, City: Siliguri, State: West
Bengal");

    p2.amount = 5644.36;

    printf("Details of Second Person!\n");

    printf("Id of Second person is: %d\n", p2.id);

    printf("Amount due by second person is: %f\n", p2.amount);

    printf("Address of second person is: %s\n", p2.address);


    return 0;
```

```
}
```

Output:-

```
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman Tripathi\OneDrive\Desktop\C Lab\" ; if (
actical_24_1 } ; if ($?) { .\Practical_24_1 }
Accessing members of structure!

Details of First Person!
Id of first person is: 1
Amount due by first person is: 5689.359863
Address of first person is: Sector 41B, Market Complex, City: Siliguri, State: West Bengal
Details of Second Person!
Id of Second person is: 2
Amount due by second person is: 5644.359863
Address of second person is: Sector 43B, Road No-06, Market Complex, City: Siliguri, State: West Bengal
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Code:-

```c
#include <stdio.h>


main() {


   int a = 21;

   int c ;


   c =  a;

   printf("Line 1 - =  Operator Example, Value of c = %d\n", c );



   c +=  a;

   printf("Line 2 - += Operator Example, Value of c = %d\n", c );



   c -=  a;

   printf("Line 3 - -= Operator Example, Value of c = %d\n", c );



   c *=  a;

   printf("Line 4 - *= Operator Example, Value of c = %d\n", c );
```

```c
   c /=  a;
   printf("Line 5 - /= Operator Example, Value of c = %d\n", c );


   c  = 200;
   c %=  a;
   printf("Line 6 - %= Operator Example, Value of c = %d\n", c );


   c <<=  2;
   printf("Line 7 - <<= Operator Example, Value of c = %d\n", c );


   c >>=  2;
   printf("Line 8 - >>= Operator Example, Value of c = %d\n", c );


   c &=  2;
   printf("Line 9 - &= Operator Example, Value of c = %d\n", c );


   c ^=  2;
   printf("Line 10 - ^= Operator Example, Value of c = %d\n", c );


   c |=  2;
   printf("Line 11 - |= Operator Example, Value of c = %d\n", c );
}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman Tripathi\On
actical_24_2 } ; if ($?) { .\Practical_24_2 }
Practical_24_2.c:3:1: warning: return type defaults to 'int' [-Wimplicit-int]
 main() {
 ^~~~
Line 1 - =  Operator Example, Value of c = 21
Line 2 - += Operator Example, Value of c = 42
Line 3 - -= Operator Example, Value of c = 21
Line 4 - *= Operator Example, Value of c = 441
Line 5 - /= Operator Example, Value of c = 21
Line 6 - = Operator Example, Value of c = 11
Line 7 - <<= Operator Example, Value of c = 44
Line 8 - >>= Operator Example, Value of c = 11
Line 9 - &= Operator Example, Value of c = 2
Line 10 - ^= Operator Example, Value of c = 0
Line 11 - |= Operator Example, Value of c = 2
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Code:-

```c
#include <stdio.h>

int main()

{


    int n, i, *ptr;



    printf("\n ENTER THE NUMBER OF USN WANT TO ENTER->");



    scanf("%d", &n);



    ptr = (int *)malloc(n * sizeof(int));

    if (ptr == NULL)


    {
```

```c
        printf("\n YOUR MEMORY IS FULL");

    }


    printf("\n ENTER THE USN->");

    for (i = 0; i < n; i++)


    {


        scanf("%d", ptr + i);

    }


    printf("\n THE USN ENTERED ARE->");


    for (i = 0; i < n; i++)


    {


        printf("%d\n", *(ptr + i));

    }


    return 0;

}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman Tripathi\OneDrive\Desktop\C Lab\" ; if ($?
actical_24_3 } ; if ($?) { .\Practical_24_3 }
Practical_24_3.c: In function 'main':
Practical_24_3.c:11:18: warning: implicit declaration of function 'malloc' [-Wimplicit-function-declaration]
      ptr = (int *)malloc(n * sizeof(int));
                   ^~~~~~
Practical_24_3.c:11:18: warning: incompatible implicit declaration of built-in function 'malloc'
Practical_24_3.c:11:18: note: include '<stdlib.h>' or provide a declaration of 'malloc'

 ENTER THE NUMBER OF USN WANT TO ENTER->3

 ENTER THE USN->23
23
236

 THE USN ENTERED ARE->23
23
236
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 25

Code:-

```c
#include <stdio.h>

struct student
{
    char name[20];

    int id;

    float marks;

};
void main()
{
    struct student s1, s2, s3;

    int dummy;

    printf("Enter the name, id, and marks of student 1 ");

    scanf("%s %d %f", s1.name, &s1.id, &s1.marks);

    scanf("%c", &dummy);

    printf("Enter the name, id, and marks of student 2 ");

    scanf("%s %d %f", s2.name, &s2.id, &s2.marks);

    scanf("%c", &dummy);

    printf("Enter the name, id, and marks of student 3 ");

    scanf("%s %d %f", s3.name, &s3.id, &s3.marks);

    scanf("%c", &dummy);

    printf("Printing the details....\n");

    printf("%s %d %f\n", s1.name, s1.id, s1.marks);

    printf("%s %d %f\n", s2.name, s2.id, s2.marks);

    printf("%s %d %f\n", s3.name, s3.id, s3.marks);

}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman Tripa
tical_25 } ; if ($?) { .\Practical_25 }
Enter the name, id, and marks of student 1 aman 2 90 20
Enter the name, id, and marks of student 2 samay 3 40 59
Enter the name, id, and marks of student 3 Printing the details....
aman 2 90.000000
20 6422280 2888910416583062500000000000000000000.000000
amay 3 40.000000
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> S
```

Practical 26

Code:-

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


// Declaration of the main
// structure
struct Organisation
{
    char organisation_name[20];
    char org_number[20];


    // Declaration of the dependent
    // structure
    struct Employee
    {
        int employee_id;
        char name[20];
        int salary;


        // variable is created which acts
        // as member to Organisation structure.
    } emp;
};


// Driver code
int main()
{
    struct Organisation org;
```

```c
    // Print the size of organisation

    // structure
    printf("The size of structure organisation : %ld\n",

            sizeof(org));


    org.emp.employee_id = 101;

    strcpy(org.emp.name, "Robert");

    org.emp.salary = 400000;

    strcpy(org.organisation_name,

            "GeeksforGeeks");

    strcpy(org.org_number, "GFG123768");


    // Printing the details
    printf("Organisation Name : %s\n",

            org.organisation_name);

    printf("Organisation Number : %s\n",

            org.org_number);

    printf("Employee id : %d\n",

            org.emp.employee_id);

    printf("Employee name : %s\n",

            org.emp.name);

    printf("Employee Salary : %d\n",

            org.emp.salary);
}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman Tr
tical_26 } ; if ($?) { .\Practical_26 }
The size of structure organisation : 68
Organisation Name : GeeksforGeeks
Organisation Number : GFG123768
Employee id : 101
Employee name : Robert
Employee Salary : 400000
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 27

Code:-

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

union Data {
    int i;
    float f;
    char str[20];
};

int main( ) {

    union Data data;

    data.i = 10;
    data.f = 220.5;
    strcpy( data.str, "C Programming");

    printf( " Address - data.i : %d\n", data.i);// memory address of i
    printf( " Address - data.f : %f\n", data.f);// memory address of f
    printf( "data.str : %s\n", data.str);

    return 0;
}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman
tical_27 } ; if ($?) { .\Practical_27 }
 Address - data.i : 1917853763
 Address - data.f : 41223605803277949000000000000000.000000
data.str : C Programming
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 28

Code:-

```c
#include <stdio.h>
union abc
{
    int a;
    char b;
} var;


void main()
{
    var.a = 65;
    int *ptr_a = &var.a;
    char *ptr_b = &var.b;
    printf("a = %d\n", var.a);
    printf("b = %c\n", var.b);
    printf("Address of a : %p\n",*ptr_a);
    printf("Address of b : %p\n",*ptr_b);
}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Am
tical_28 } ; if ($?) { .\Practical_28 }
a = 65
b = A
Address of a : 00000041
Address of b : 00000041
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 29

Storage classes in C

Storage Specifier	Storage	Initial value	Scope	Life
auto	stack	Garbage	Within block	End of block
extern	Data segment	Zero	global Multiple files	Till end of program
static	Data segment	Zero	Within block	Till end of program
register	CPU Register	Garbage	Within block	End of block

Code:-

```c
// A C program to demonstrate different storage

// classes

#include <stdio.h>


// declaring the variable which is to be made extern

// an initial value can also be initialized to x

int x;


void autoStorageClass()

{


    printf("\nDemonstrating auto class\n\n");


    // declaring an auto variable (simply

    // writing "int a=32;" works as well)

    auto int a = 32;
```

```c
    // printing the auto variable 'a'

    printf("Value of the variable 'a'"

        " declared as auto: %d\n",

        a);


    printf("-----------------------------");

}


void registerStorageClass()

{


    printf("\nDemonstrating register class\n\n");


    // declaring a register variable

    register char b = 'G';


    // printing the register variable 'b'

    printf("Value of the variable 'b'"

        " declared as register: %d\n",

        b);


    printf("-----------------------------");

}


void externStorageClass()

{


    printf("\nDemonstrating extern class\n\n");


    // telling the compiler that the variable

    // x is an extern variable and has been

    // defined elsewhere (above the main
```

```c
    // function)
    extern int x;


    // printing the extern variables 'x'
    printf("Value of the variable 'x'"
        " declared as extern: %d\n",
        x);


    // value of extern variable x modified
    x = 2;


    // printing the modified values of
    // extern variables 'x'
    printf("Modified value of the variable 'x'"
        " declared as extern: %d\n",
        x);


    printf("-----------------------------");
}


void staticStorageClass()
{
    int i = 0;


    printf("\nDemonstrating static class\n\n");


    // using a static variable 'y'
    printf("Declaring 'y' as static inside the loop.\n"
        "But this declaration will occur only"
        " once as 'y' is static.\n"
        "If not, then every time the value of 'y' "
        "will be the declared value 5"
```

```c
        " as in the case of variable 'p'\n");


    printf("\nLoop started:\n");


    for (i = 1; i < 5; i++) {


        // Declaring the static variable 'y'

        static int y = 5;


        // Declare a non-static variable 'p'

        int p = 10;


        // Incrementing the value of y and p by 1

        y++;

        p++;


        // printing value of y at each iteration

        printf("\nThe value of 'y', "

            "declared as static, in %d "

            "iteration is %d\n",

            i, y);


        // printing value of p at each iteration

        printf("The value of non-static variable 'p', "

            "in %d iteration is %d\n",

            i, p);

    }


    printf("\nLoop ended:\n");


    printf("-----------------------------------");

}
```

```c
int main()
{

    printf("A program to demonstrate"
        " Storage Classes in C\n\n");


    // To demonstrate auto Storage Class
    autoStorageClass();


    // To demonstrate register Storage Class
    registerStorageClass();


    // To demonstrate extern Storage Class
    externStorageClass();


    // To demonstrate static Storage Class
    staticStorageClass();


    // exiting
    printf("\n\nStorage Classes demonstrated");


    return 0;
}
```

Output:-

```
Demonstrating register class

Value of the variable 'b' declared as register: 71
--------------------------------
Demonstrating extern class

Value of the variable 'x' declared as extern: 0
Modified value of the variable 'x' declared as extern: 2
--------------------------------
Demonstrating static class

Declaring 'y' as static inside the loop.
But this declaration will occur only once as 'y' is static.
If not, then every time the value of 'y' will be the declared value 5 as in the case of variable 'p'

Loop started:

The value of 'y', declared as static, in 1 iteration is 6
The value of non-static variable 'p', in 1 iteration is 11

The value of 'y', declared as static, in 2 iteration is 7
The value of non-static variable 'p', in 2 iteration is 11

The value of 'y', declared as static, in 3 iteration is 8
The value of non-static variable 'p', in 3 iteration is 11

The value of 'y', declared as static, in 4 iteration is 9
The value of non-static variable 'p', in 4 iteration is 11

Loop ended:
--------------------------------

Storage Classes demonstrated
```

Practical 30

Code:-

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

int main()
{
    int num;
    FILE *fptr;

    if ((fptr = fopen("C:\\File.txt", "r")) == NULL)
    {
        printf("Error! opening file");

        // Program exits if the file pointer returns NULL.
        exit(1);
    }

    fscanf(fptr, "%d", &num);

    printf("Value of n=%d", num);
    fclose(fptr);

    return 0;
}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman Tr
{ gcc Practical_30.c -o Practical_30 } ; if ($?) { .\Practical_30 }
Value of n=45
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 31

Code:-

```c
// C program to illustrate fgetc() function

#include <stdio.h>

int main ()
{

    // open the file

    FILE *fp = fopen("File.txt","r");


    // Return if could not open file

    if (fp == NULL)

    return 0;


    do
    {
        // Taking input single character at a time

        char c = fgetc(fp);


        // Checking for end of file

        if (feof(fp))

            break ;


        printf("%c", c);
    } while(1);


    fclose(fp);

    return(0);

}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman
{ gcc Practical_31_1.c -o Practical_31_1 } ; if ($?) { .\Practical_
  45 Hi, My name is Aman Tripathi.
 I am a student of BCA.
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Code:-

```c
// C program to illustrate fputc() function

#include<stdio.h>

int main()

{

    int i = 0;

    FILE *fp = fopen("output.txt","w");


    // Return if could not open file

    if (fp == NULL)

    return 0;


    char string[] = "good bye", received_string[20];


    for (i = 0; string[i]!='\0'; i++)


        // Input string into the file

        // single character at a time

        fputc(string[i], fp);
```

```c
    fclose(fp);

    fp = fopen("File.txt","r");


    // Reading the string from file

    fgets(received_string,20,fp);


    printf("%s", received_string);


    fclose(fp);

    return 0;

}
```

Output:-


```
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\
{ gcc Practical_31_2.c -o Practical_31_2 } ; if ($?) { .\
good bye
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 32

Code:-

```c
#include <stdio.h>

#include <string.h>

int main()

{

    FILE *fp;

    char str[80];

    char c;

    fp = fopen("File1.txt", "a");

    FILE *fpt;

    fpt = fopen("File1.txl", "r");

    printf("Enter your message:");

    gets(str);


    fprintf(fp, "%s", str);


    printf("Your message is appended in File1.txt file.");

    c = fgetc(fpt);

    while (c != EOF)

    {

        printf("%c", c);

        c = fgetc(fpt);

    }

    fclose(fp);

    fclose(fpt);

    // File validation is to be added..

    return 0;

}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Ama
tical_32 } ; if ($?) { .\Practical_32 }
Enter your message:Aman tripathi
Your message is appended in File1.txt file.
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 33

Code:-

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
  FILE *fp;
  char str[80], str1[80];


  fp = fopen("File1.txt","w");


  if(fp == NULL)
  {
printf("Cannot open file.\n");
exit(1);
  }
  printf("Enter string to be written in a file: ");
  fscanf(stdin, "%s", str); /*Read from keyboard */


  fprintf(fp, "%s", str); /*Write str to file */
  fclose(fp);


  fp = fopen("File1.txt","r");


  if(fp == NULL) {
printf("Cannot open file.\n");
exit(1);
  }
  fscanf(fp, "%s", str1); /* read a word from file and copy into str1 */
  fprintf(stdout, "%s", str1); /* print str1 on screen */
```

```
    return 0;

}
```

Output:-

Practical 34

Code:-

```c
#include<stdio.h>
int main(){
FILE *fp;
char ch;
fp=fopen("File1.txt" ,"r");
fseek( fp,15,SEEK_SET);
ch=fgetc(fp);
while(!feof(fp ))
{
printf("%c" ,ch);
printf("%d", ftell(fp ));
ch= getc(fp );
}
rewind(fp );
while(!feof(fp))
{
printf("%c" ,ch);
printf("%d" ,ftell(fp));
ch= fgetc(fp);
}
fclose(fp );
}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\A
tical_34 } ; if ($?) { .\Practical_34 }
 0T1h2i3s4
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```
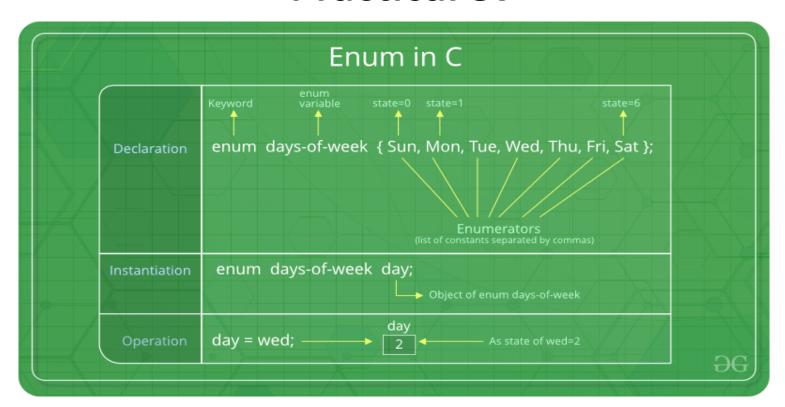
Practical 35

Code:-

```c
#include<stdio.h>
#include<conio.h>
void main(){
FILE *fp;
char c;
fp=fopen("File.txt","r");

while((c=fgetc(fp))!=EOF){
printf("%c",c);
}

rewind(fp);//moves the file pointer at beginning of the file

while((c=fgetc(fp))!=EOF){
printf("%c",c);
}

fclose(fp);
getch();
}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\
tical_35 } ; if ($?) { .\Practical_35 }
  45 Hi, My name is Aman Tripathi.
 I am a student of BCA.    45 Hi, My name is Aman Tripathi.
 I am a student of BCA.
```

Practical 36

Code:-

```c
#include <stdio.h>

struct student

{

    int sno;

    char sname[30];

    float marks;

    char temp;

};

void main()

{

    struct student s[60];

    int i;

    FILE *fp;

    fp = fopen("File2.txt", "w");

    for (i = 0; i < 2; i++)

    {

        printf("enter details of student %d\n", i + 1);

        printf("student number:");

        scanf("%d", &s[i].sno);

        scanf("%c", &s[i].temp);

        printf("student name:");

        gets(s[i].sname);

        printf("student marks:");

        scanf("%f", &s[i].marks);

        fwrite(&s[i], sizeof(s[i]), 1, fp);

    }

    fclose(fp);

    fp = fopen("File2.txt", "r");
```

```c
    for (i = 0; i < 2; i++)

    {

        printf("details of student %d are\n", i + 1);

        fread(&s[i], sizeof(s[i]), 1, fp);

        printf("student number = %d\n", s[i].sno);

        printf("student name = %s\n", s[i].sname);

        printf("marks = %f\n", s[i].marks);

    }

    fclose(fp);

}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman
tical_36 } ; if ($?) { .\Practical_36 }
enter details of student 1
student number:9650549574
student name:Ram Kumar
student marks:100/100
enter details of student 2
student number:student name:student marks:2928347437
details of student 1 are
student number = 1060614982
student name = Ram Kumar
marks = 100.000000
details of student 2 are
student number = 1119284
student name = 100
marks = 2928347392.000000
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> ▊
```

Practical 37

Enum in C

Code:-

```c
// An example program to demonstrate working

// of enum in C

#include<stdio.h>


enum week{Mon, Tue, Wed, Thur, Fri, Sat, Sun};


int main()

{

    enum week day;

    day = Wed;

    printf("%d",day);

    return 0;

}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman Tr
tical_37 } ; if ($?) { .\Practical_37 }
2
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 38

Code:-

```c
#include<stdio.h>


/*

structure is defined above all functions so it is global.

*/


struct student

{

    char name[20];

    int roll_no;

    int marks;

};


void print_struct(char name[], int roll_no, int marks);


int main()

{

    struct student stu = {"Tim", 1, 78};

    print_struct(stu.name, stu.roll_no, stu.marks);

    return 0;

}


void print_struct(char name[], int roll_no, int marks)

{

    printf("Name: %s\n", name);

    printf("Roll no: %d\n", roll_no);

    printf("Marks: %d\n", marks);

    printf("\n");
```

```
}
```

Output:-

```
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman
tical_38 } ; if ($?) { .\Practical_38 }
Name: Tim
Roll no: 1
Marks: 78

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Code:-

```c
#include <stdio.h>

#include <string.h>


struct student

{

        int id;

        char name[20];

        float percentage;

};



void func(struct student *stu1);



int main()

{

    struct student stu1;


    stu1.id=21;

    strcpy(stu1.name, "Rambo");
```

```c
    stu1.percentage = 96.5;


    func(&stu1);

    return 0;

}


void func(struct student *stu1)

{

    printf(" Id is: %d \n", stu1->id);

    printf(" Name is: %s \n", stu1->name);

    printf(" Percentage is: %f \n", stu1->percentage);

}
```

Output:-

Practical 39

Code:-

```c
// C program to illustrate

// command line arguments

#include<stdio.h>


int main(int argc,char* argv[])

{

    int counter;

    printf("Program Name Is: %s",argv[0]);

    if(argc==1)

        printf("\nNo Extra Command Line Argument Passed Other Than Program Name");

    if(argc>=2)

    {

        printf("\nNumber Of Arguments Passed: %d",argc);

        printf("\n----Following Are The Command Line Arguments Passed----");

        for(counter=0;counter<argc;counter++)

            printf("\nargv[%d]: %s",counter,argv[counter]);

    }

    return 0;

}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\Aman Tripathi\OneDrive\
tical_39 } ; if ($?) { .\Practical_39 }
Program Name Is: C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab\Practical_39.exe
No Extra Command Line Argument Passed Other Than Program Name
PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab>
```

Practical 40

Code:-

```c
#include<stdio.h>
#include<conio.h>
void swap(int *, int *);
int main()
{
    int a,b;
    printf("\nEnter value of a and b:");
    scanf("%d%d",&a,&b);
    printf("\nBefore Swapping a=%d and b=%d",a,b);
    swap(&a,&b);
    printf("\n\nAfter swapping a=%d and b=%d",a,b);
    getch();
    return 0;
}
void swap(int *x,int *y)
{
    int temp;
    temp=*x;
    *x=*y;
    *y=temp;
}
```

Output:-

```
Windows PowerShell
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PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users
tical_40 } ; if ($?) { .\Practical_40 }

Enter value of a and b:12
23

Before Swapping a=12 and b=23

After swapping a=23 and b=12
```

Practical 41

Code:-

```c
#include<stdio.h>
#include<conio.h>
void swap(int *x,int *y)
{
    int temp;
    temp=*x;
    *x=*y;
    *y=temp;
}
int main()
{
    int a,b;
    printf("\nEnter first number: ");
    scanf("%d",&a);
    printf("\nEnter second number: ");
    scanf("%d",&b);
    printf("\nBefore swapping, value of a: %d and value of b: %d",a,b);
    swap(&a,&b);
    printf("\nAfter swapping, value of a: %d and value of b: %d",a,b);
    getch();
    return 0;
}
```

Output:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\
tical_41 } ; if ($?) { .\Practical_41 }

Enter first number: 12

Enter second number: 23

Before swapping, value of a: 12 and value of b: 23
After swapping, value of a: 23 and value of b: 12
```

Practical 42

Code:-

```c
#include <stdio.h>

#include <conio.h>

int find_factorial(int);

int main()
{

    int num, fact;

    printf("\nEnter any integer number:");

    scanf("%d", &num);

    fact = find_factorial(num);

    printf("\nfactorial of %d is: %d", num, fact);

    getch();

    return 0;

}

int find_factorial(int n)
{

    if (n == 0)

        return (1);

    return (n * find_factorial(n - 1));

}
```

Code:-

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Aman Tripathi\OneDrive\Desktop\C Lab> cd "c:\Users\
tical_42 } ; if ($?) { .\Practical_42 }

Enter any integer number:6

factorial of 6 is: 720
```