

## Exp 1(P)

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Write a program to evaluate the following algebraic sum.

- $(a+n+b)/(a^n-b)$
- $2.5 \log n - \cos 30 + |n^2 - y^2| + \sqrt{xy}$
- $n^5 + 10n^4 + 8n^3 + 4n + 2$

```
#include <stdio.h>
#include <math.h>
void first() {
    printf("enter the values a, n, b to evaluate (a+n+b)/(a^n-b)");
    int a, n, b; float result=1;
    scanf("%d %d %d", &a, &n, &b);
    result = (a*x+b) / (a*x-b);
    printf("(a*x+b) / (a*x-b) = %f", result);
}
void second() {
    printf("enter the values x, y to evaluate 2.5log n - cos 30 + |x^2 - y^2| + sqrt(xy)");
    int x, y; float result=2;
    scanf("%d %d", &x, &y);
    result = 2.5 * log(x) - cos(30) + abs(pow(x, 2) - pow(y, 2)) + sqrt(x*y);
    printf("2.5log n - cos 30 + |x^2 - y^2| + sqrt(xy) = %f", result);
}
void third() {
    printf("enter the value of x to evaluate, n^5 + 10n^4 + 8n^3 + 4n + 2");
    int n; float result=3;
    scanf("%d", &n);
    result = pow(n, 5) + 10 * pow(n, 4) + 8 * pow(n, 3) + 4 * n + 2;
    printf("n^5 + 10n^4 + 8n^3 + 4n + 2 = %f", result);
}
```

## OUTPUT

enter the values of a,x,b to evaluate  $(ax+b)/(ax-b)$

1

2

3

$$(ax+b)/(ax-b) = -5.000000$$

enter the values of xy to evaluate  $2.5 \log n - \cos 30 + |x^2 - y^2| + \sqrt{xy}$

• 1

• 0

$$2.5 \log n - \cos 30 + |x^2 - y^2| + \sqrt{xy} = -0.154251$$

enter the values of x to evaluate  $x^5 + 10x^4 + 8x^3 + 4x + 2$

2

$$x^5 + 10x^4 + 8x^3 + 4x + 2 = 266.000000$$

# EXP - 1 (B)

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Write a program to produce ASCII value of a given character and vice versa

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

```
void char_to_ascii()
{
    char ch;
    printf("enter the character");
    scanf("%c", &ch);
    printf("the ascii value is %d", ch);
}
```

```
void ascii_to_char()
{
    int a;
    printf("enter the ascii value");
    scanf("%d", &a);
    printf("the equivalent character is %c", a);
}
```

```
int main()
{
    printf("enter choice\n 1 for character to ascii\n 2 for ascii to character");
    int choice;
    scanf("%d", &choice);
    if(choice == 1)
        void char_to_ascii();
    else if(choice != 2)
        ascii_to_char();
    else
        printf("wrong choice"); getch(); return 0;
}
```

HW

```
int main() {  
    void first();  
    second();  
    third();  
    getch();  
    return 0;  
}
```

enter choice:

- 1 for character to ascii
- 2 for ascii to character

1

enter the character

A

the ascii value is 65

enter choice:

- 1 for character to ascii
- 2 for ascii to character

2

enter the ascii value

42

the equivalent character is \*

enter choice;

- 1 for character to ascii
- 2 for ascii to character.

3

wrong choice

## EXPERIMENT-2 (A)

AIM:- Write a program to print the largest of five numbers.

```
#include <stdio.h>
#include <conio.h>
int main(){
    int a[5], f;
    clrscr();
    scanf ("%d %d %d %d %d", &a[0], &a[1], &a[2], &a[3], &a[4]);
    f = a[0];
    for (int i=0; i<5; i++)
    {
        if (a[i]>f)
            f=a[i];
    }
    printf ("the largest of all the numbers is %d", f);
    getch();
    return 0;
}
```

1  
9  
2  
5  
8

the largest of all the numbers is 9

## EXPERIMENT 2(B)

WRITE A PROGRAM TO FIND FACTORIAL OF A GIVEN NUMBER

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

```
#include <conio.h>
```

```
int main()
```

```
{
```

```
    int fact = 1, n, i;
```

```
    printf("Enter the number");
```

```
    scanf("%d", &n);
```

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

```
{
```

```
    fact = fact * i;
```

```
}
```

```
    printf("The factorial is %d", fact);
```

```
    return 0;
```

```
    getch();
```

```
}
```

AM ✓

Enter the number

5

the factorial is 120 :

exp 3(A)

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WRITE A PROGRAM TO FIND THE PRIME NUMBERS BETWEEN  
1-100.

```
#include<stdio.h>
#include<conio.h>
int main () { int flag;
printf("the prime numbers between 1-100\n");
for (int i=2; i<=100; i++) { flag = 0;
    for (int j=1; j<=i; j++)
        {if (j%i==0)
            flag++;
        }
    if (flag == 2)
        printf("%d", i);
        printf(" ");
    }
getch();
return 0;
}
```

All the prime numbers from 1-100  
are:

2 3 5 7 11 13 17 19 23 27 29  
31 37 41 43 47 53 59 61 67  
71 73 79 83 87 89 97

## EXP. 3(B)

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WRITE A PROGRAM TO DISPLAY THE GIVEN PATTERN

1  
2 2  
3 3 3  
4 4 4

```
#include <stdio.h>
#include <conio.h>
int main() {
    clrscr();
    for(int i=1; i<=4; i++) {
        printf("\n");
        for int j=1; j<=i; j++)
            { printf("%d", j); }
    }
    getch();
    return 0;
}
```

(B) ✓

Output:

```
1
22
333
4444
```

## ASSIGNMENT 4 (A)

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WRITE A PROGRAM TO DISPLAY THE FIBONACCI SEQUENCE

```
#include <stdio.h>
#include <conio.h>
int main(){
    int a=0, b=1, s, n;
    printf ("Enter number : ");
    scanf ("%d", &n);
    printf ("%d %d", a, b);
    for (int i=2 ; i<n ; i++)
    {
        s=a+b;
        printf ("%d", s);
        a=s;
        b=s;
    }
    getch();
    return ();
}
```

Output :

---

Enter number 5

0 1 1 2 3

## ASSIGNMENT 4(B)

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WRITE A PROGRAM TO EVALUATE THE FOLLOWING SUM

i)  $\frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots$

ii)  $1 + \frac{1}{x} + \frac{1}{x^2} + \frac{1}{x^3} + \frac{1}{x^4} + \dots$

#include <iostream.h>

#include <stdio.h>

#include <math.h>

int main() {

int n, x;

float sum1=0, sum2=0;

printf("enter the value of n");

scanf ("%d", &n)

for(int i=1; i<=n; i++) {

sum1+= (float) 1/i;

}

printf ("The sum of the series  $\frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \dots$  is %f, sum1);

printf ("enter the value of n and x");

scanf ("%d %d", &n, &x);

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

sum2= (float) 1/pow(x,i));

}

printf ("The sum of the series  $x^0 + \frac{1}{x^1} + \frac{1}{x^2} + \dots$  is %f, sum2);

getch(); return 0;

Output:

Enter the value of n 4  
the sum of the series  $1/1 + 1/2 + 1/3 + \dots$   
is 2.083333

enter the value of n and x 4 2  
the sum of the series  $1/n^0 + 1/n^1$   
 $+ 1/n^2 + \dots$  is 1.937500

## PRACTICE-5

Objective:

Write a program for matrices to do the following operation

Addition/Subtraction of matrixes

Multiplication of matrices

To find upper and lower triangular matrix

Transpose of a matrix

```
#include <stdlib.h>
#include <stdio.h>
#include <mem.h>
int i, j, k, m, n, sum, p, q;

int** getarray (int a, int b) {
    int arr**; arr = malloc (sizeof (int)* a);
    printf ("enter the matrix");
    for (i=0; i<a; i++) {
        arr[i] = malloc (sizeof (int)* b);
        for (j=0; j<b; j++)
            scanf ("%d", &arr[i][j]);
    }
    return arr;
}
```

```
void arith_op() {
    int ch;
    printf ("\n enter 1 for addition\n 2 for subtraction\n 3
            for multiplication");
    scanf ("%d", &ch);
```

```
if (ch == 1 || ch == 2) {
```

```
    printf ("enter the row and column size of matrices")
```

```
    scanf ("%d %d", &m, &n)
```

```
    int** A = getarray(m, n);
```

```
    int** B = getarray(m, n);
```

```
    for (i = 0; i < m; i++) {
```

```
        if (ch == 1) {
```

```
            sum = A[i][j] + B[i][j];
```

```
            printf ("%d", sum);
```

```
}
```

```
        else if (ch == 2) {
```

```
            sum = A[i][j] - B[i][j];
```

```
            printf ("%d", sum);
```

```
}
```

```
        else printf ("invalid input");
```

```
}
```

```
        printf ("\n");
```

```
}
```

```
    if (ch == 3) {
```

```
        printf ("enter row and column size of A");
```

```
        scanf ("%d %d", &m, &n);
```

```
        printf ("enter row and column size of B");
```

```
        scanf ("%d %d", &p, &q);
```

```
        if (n != p)
```

```
            printf ("invalid row or column sizes");
```

```
        else {
```

```
            int** A = getarray(m, n);
```

```

int **B = getarray(p, q);
int mult [m][q];
for (i=0; i < m; i++)
    for (j=0; j < q; j++)
        for (k=0; j < n; k++)
            mult[i][j] += A[i][k]*B[k][j];

for (i=0; i < m; i++)
    for (j=0; j < q; j++)
        printf("%d ", mult[i][j]);
    printf("\n");
}
}

```

```

int one_arr() {
    int ch;
    printf("enter 1 for transpose\n 2 for upper triangular\n
           3 for lower triangular.");
    scanf("%d", &ch);
    if (ch != 1 || ch != 2 || ch != 3) printf("invalid input");
    else {
        printf("enter the row and column size\n");
        scanf("%d %d", &m, &n);
        int **A = getarray(m, n);
        if (ch == 1) {
            for (i=0; i < n; i++)
                for (j=0; j < m; j++)
                    printf("%d ", A[j][i]);
            printf("\n");
        }
    }
}

```

}

else if (ch == 2 || ch == 3) {

if (m != n) printf ("not a square matrix");

else {

if (ch == 2) {

for (i = 0; i < m; i++) {

for (j = 0; j < m; j++) {

if (i <= j)

printf ("odd", A[i][j]);

else printf (" "));

}

}

if (ch == 3) {

for (i = 0; i < m; i++) {

for (j = 0; j < n; j++) {

if (i >= j)

printf ("odd", A[i][j]);

else printf (" "));

}

printf ("\n");

}

}

}

int main () {

int ch;

```
printf ("enter for arithmetic operations addition, subtraction,  
multiplication\n enter ? for transpose, triangular  
matrix");  
scanf ("%d", &ch);  
switch(ch){  
    case 1: arith_op();  
        break;  
    case 2: one-arr();  
        break;  
    default: printf ("invalid input");  
        break;  
}  
}
```

enter 1 for arithmetic operations addition, subtraction,  
multiplication

enter 2 for transpose, triangular matrix

1

enter 1 for addition

2 for subtraction

3 for multiplication

2

enter the row and column size of the matrices

4

4

enter the matrix

0

8

9

7

enter the matrix

8

7

6

3

-8

1

3

-4

## EXP-6

WAP to find factorial of a program using recursion  
write a recursive program for tower of honoi problem

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

int fact(int a){ int f;
if(a==1)
    return 1;
else
    f = a* fact(a-1);
return f;
}

int main(){ int a;
printf("enter the number");
scanf("%d", &a);
printf("the factorial of %d is %d", a, fact(a));
}
```

```
enter a number6
the factorial of 6 is 720
Process returned 0 (0x0)   execution time : 2.365 s
Press any key to continue.
```

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```
void hanoi(int n, char start, char finish, char mid) {
    if (n==1)
        printf("move %d from %c to %c, n, start, finish);
        hanoi(n-1, start, mid, finish);
        printf("move %d from %c to %c, n, start, finish);
        hanoi(n-1, mid, finish, start);
    }
int main() { int n;
    print("number of disks");
    scanf ("%d", &n);
    hanoi (n, 'A', 'C', 'B');
    return 0;
}
```

```
number of disks4
move 1 from A to B move 2 from A to C
move 1 from B to C move 3 from A to B
move 1 from C to A move 2 from C to B
move 1 from A to B move 4 from A to C
move 1 from B to C move 2 from B to A
move 1 from C to A move 3 from B to C
move 1 from A to B move 2 from A to C
move 1 from B to C
Process returned 0 (0x0) execution time : 1.861 s
Press any key to continue.
```

### Exp-7

⇒ WAP to perform the following operations on string without string function

- To find length of string
- To concatenate two strings
- To find reverse of a string
- To copy one string to another string.

```
#include <stdio.h>
#include <conio.h>
void str_len() {
    char str[100]; int i=0; count=0;
    printf("enter the string; max 100");
    gets(str);
    while(str[i]!='\0') {
        if(str[i]!=' ')
            count++;
        i++;
    }
    printf("length of the string is %d", count);
}
```

```
void str_cat() {
    char str1[100], str2[100]; char str3[200]; int i=0; int j=0;
    printf("enter the two strings");
    gets(str1); gets(str2);
    while(str1[i]!='\0') {
        str3[i]=str1[i];
        i++;
    }
    str3[i]=str2[j];
    j++;
}
```

```

while(str2[j]!='\0'){
    str3[i]=str2[j];
    i++; j++;
}
printf("the concatenated string is %s", str3);
}

```

```

void revstr(){
    char str[100]; int i=0;
    gets(str);
    while(str[i]!='\0'){
        i++;
    }
    while(i>=0)
    { printf("%c", *(str+i));
        i--;
    }
}

```

```

void str_cpy(){
    char str1[100];
    char str2[100]; int i=0;
    printf("enter the string");
    gets(str1);
    while(str1[i]!='\0'){
        str2[i]=str1[i];
        i++;
    }
    printf("string copied %s", str2);
}

```

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```
int main() { int ch;
printf("enter the operation\n 1 to find length\n 2 to concatenate\n
       3 to find reverse\n 4 to copy one string to another")
scanf("%d", &ch);
switch(ch) {
    case 1: str_len();
              break;
    case 2: str_cat();
              break;
    case 3: rev_str();
              break;
    case 4: str_cpy();
              break;
    default: invalid; printf("invalid input");
              break;
}
return 0;
}
```

## EXP- 8

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WAP to create student info system using structure and union;

```
#include<stdio.h>
struct student {
    char name[20], sex;
    int rollno, perc;
};

union data {
    struct student s;
};

union data d;

void main()
{
    printf(" enter name, sex, rollno, perc");
    scanf("%s %c %d %d", d.s.name, &d.s.sex, &d.s.rollno, &d.s_perc);
    printf(" the details are %s\n%c\n%d\n%d", d.s.name, d.s.sex,
        d.s.rollno, d.s_perc);
}
```