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FCS2122007

PWC JOURNAL

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SIES

RISE WITH EDUCATION

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S.I.E.S College of Arts, Science and Commerce
Sion(W), Mumbai – 400 022.

CERTIFICATE

This is to certify that **Mr.** / Miss. **Ansari Saad Ahmed** Roll No. **FCS2122007** Has successfully completed the necessary course of experiments in the subject of **Programming with C** during the academic year **2021 – 2022**complying with the requirements of **University of Mumbai**, for the course of **F.Y.BSc. Computer Science [Semester-2]**

Prof. In-Charge
Ms. Shivani Deopa
(Programming with C)

Examination Date:
Examiner's Signature & Date:

Head of the Department
Prof. Manoj Singh

College Seal
And
Date

PRACTICAL NO.1
Aim1: Programs to understand the basic data types and I/O.

PRACTICAL NO.2
Aim: Programs on Operators and Expressions

PRACTICAL NO.3
Aim- Programs on decision statements.

PRACTICAL NO.4
Aim: Programs on looping
Practical No.4a
Write a program on **number palindrome** demonstrating while loop
Practical No.4b
Write a program on **Armstrong number** demonstrating while loop

PRACTICAL NO.5
Aim: Programs on arrays.
a] Write a program on Addition of 2 Matrix and
b] Write a program on Multiplication of 2 Matrix

PRACTICAL NO.6
Aim: Programs on functions.

PRACTICAL NO.7
Aim: Programs on structures and unions.

PRACTICAL NO.8
Aim: Programs on pointers.

PRACTICAL NO.9
Aim: Programs on string manipulations.

PRACTICAL NO.10
Aim: Programs on basic file operations.

Practical 1&2

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Aim1: Programs to understand the basic data types and I/O.AND

Aim2: Programs on Operators and Expressions

Main AIM: Write a C program to get input from the users of data type char use to display First character of your name and data type int and float to perform Addition, Subtraction, Multiplication, Division takes the input from the user (use nested if-else)

➢ Code:

```c
#include <stdio.h>
int main()
{
    char name;
    int a,b,c;
    float d;
    printf("Enter the first character of your name: ");
    scanf("%c",&name);
    printf("The first character of your name is: %c\n",name);

    printf("Enter The First Integer: ");
    scanf("%d",&a);
    printf("Enter The Second Integer: ");
    scanf("%d",&b);
    printf("Select:\n1) Addition\n2) Subtraction\n3) Multiplication\n4) Division\n");
    scanf("%d",&c);

    if(c==1)
    {
        d=a+b;
        printf("Addition is: %f",d);
    }
    else if(c==2)
    {
        d=a-b;
        printf("Subtraction is: %f",d);
    }
    else if(c==3)
    {
        d=a*b;
        printf("Multiplication is: %f",d);
    }
    else if(c==4)
    {
        d=a/b;
        printf("Division is: %f",d);
    }
    return 0;
}
```

✓ Output:

```
Enter the first character of your name: S
The first character of your name is: S
Enter The First Integer: 111
Enter The Second Integer: 77
Select:
1) Addition
2) Subtraction
3) Multiplication
4) Division
2
Subtraction is: 34.000000
```

Practical 3

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Aim- Programs on decision statements.

Write a menu-driven program using Switch case statement to calculate the following:

1. Arca of circle
2. Area of square
3. Area of sphere
4. Area of rectangle

```c
#include <stdio.h>
void main ()
{
    int choice,r,s,l,w;
    float area;
    printf("Input 1 for area of circle\n");
    printf("Input 2 for area of square\n");
    printf("Input 3 for area of sphere\n");
    printf("Input 4 for area of rectangle\n");
    printf("Input your choice : ");
    scanf("%d",&choice);
    switch(choice)
    {
        case 1:
            printf("Input radious of the circle : ");
            scanf("%d",&r);
            area=3.14*r*r;
            break;
        case 2:
            printf("Input the side of the square : ");
            scanf("%d",&s);
            area= s*s;
            break;
        case 3:
            printf("Input the radius of the sphere :");
            scanf("%d",&r);
            area= 4*3.14*(r*r);
            break;
        case 4:
            printf("Input length and width of the rectangle : ");
            scanf("%d%d",&l,&w);
            area= l*w;
            break;
    }
    printf("The area is : %f\n",area);
}
```

Input

```
Input 1 for area of circle
Input 2 for area of square
Input 3 for area of sphere
Input 4 for area of rectangle
Input your choice : 4
Input length and width of the rectangle : 6 7
The area is : 42.000000
```

```
Input your choice : 3
Input the radius of the sphere :11
The area is : 1519.760010

Input your choice : 2
Input the side of the square : 8
The area is : 64.000000

Input your choice : 1
Input radious of the circle : 12
The area is : 452.160004
```

Practical 4

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Practical 4a

Aim: Programs on looping Practical No.4a Write a program on number palindrome demonstrating while loop (A palindrome is a word, number, phrase, or other sequence of characters which reads the same backward as forward, such as madam or racecar or 1221)

```c
#include<stdio.h>
int main()
{
int n,r,sum=0,temp;
printf("enter the number=");
scanf("%d",&n);
temp=n;
while(n>0)
{
r=n%10;
sum=(sum*10)+r;
n=n/10;
}
if(temp==sum)
printf("palindrome number ");
else
printf("not palindrome");
return 0;
}
```

```
enter the number=1221
palindrome number
```

Practical 4b

Write a program on Armstrong number demonstrating while loop (Arrmstrong number is a number that is equal to the surm of cubes of its digits. For example 0, 1, 153, 370, 371 and 407 are the Armstrong numbers. Ex. 153=1+5+3= 1+125+27=153)

```c
#include<stdio.h>
 int main()
{
int n,r,sum=0,temp;
printf("Enter a number: ");
scanf("%d",&n);
temp=n;
while(n>0)
{
r=n%10;
sum=sum+(r*r*r);
n=n/10;
}
if(temp==sum)
printf("It is an Armstrong  number ");
else
printf("Itis not an Armstrong number");
return 0;
}
```

```
Enter a number: 153
It is an Armstrong  number
```

Practical 6

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Aim: Programs on functions. Write a Switch Case having menu for options: 1|Find out maximum and minimum of some values using function (Take the size of array from user then ask for numbers in that array find minimum and maximum number from that set of array numbers) 2]Check perfect numbers using the function (Perfect number, a positive integer that is equal to the sum of its proper divisors. Eg. 6 is divisible by 1,2 and 3 if you add 1+2+3-6 and therefore 6 is a perfect number) 3]Find the Factorial of any number using the function. 4]Fibonacci Scries using Recursion function

```c
#include <stdio.h>
// Fibonacci function
int choice;

void fibo(int n)
{
    static int n1 = 0, n2 = 1, n3;
    if (n > 0)
    {
        n3 = n1 + n2;
        n1 = n2;
        n2 = n3;
        printf("%d", n3);
        fibo(n - 1);
    }
}

// Factorial function

void Fact(int n)
{
    int i, fact = 1;
    if (n < 0)
        printf("Error! Factorial of negative number doesn't exist.");
    else
    {
        for (i = 1; i <= n; i++)
        {
            fact = fact * i;
        }
        printf("Factorial of %d =%d", n, fact);
    }
}
// Perfect number

void perfect(int n)
{
    int i = 1, sum = 0;
    while (i < n)
    {
        if (n % i == 0)
// Find max and min

int maxmin(int a[], int n)
{
    int min, max, i;
    min = max = a[0];
    for (i = 1; i < n; i++)
    {
        if (min > a[i])
            min = a[i];
        if (max < a[i])
            max = a[i];
    }
    printf("press 1 to find out maximum and minimum of some values.\n");
    printf("press 2 to check perfect numbers.\n");
    printf("press 3 to Find the Factorial of any number.\n");
    printf("press 4 to Find the Fibonacci Series of a number.\n");
    printf("Enter your choice:\n");
    scanf("%d", &choice);

    switch (choice)
    {
    case 1:
        maxmin(a, n);
        break;
    }

    case 2:
    {
        int n;
        printf("Enter a number:");
        scanf("%d", &n);
        perfect(n);
        printf("Enter an integer:");
        scanf("%d", &n);
        Fact(n);
        break;
    }

    case 4:
    {
        int n;
        printf("Enter the number of elements: ");

    default:
        printf("Wrong Input\n");
    }
}
```

```
press 1 to find out maximum and minimum of some values.
press 2 to check perfect numbers.
press 3 to Find the Factorial of any number.
press 4 to Find the Fibonacci Series of a number.
Enter your choice:
1
Enter size of the array:5
Enter elemennts in array :22 77 29 79 99 100
Minimum number is 22
 Maximum number is 99
```

Practical 7

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Aim: Programs on structures and unions.

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

struct student
{
    int rollno;
    char name[60];
}s1;

union student1
{
    int rollno;
    char name[60];
}u1;

int main()
{
    s1.rollno=1;
    strcpy(s1.name, "Saad");
    printf( "Rollno: %d\n", s1.rollno);
    printf( "Name: %s\n", s1.name);

    u1.rollno=1;
    strcpy(u1.name, "Ansari");
    printf( "Rollno: %d\n", u1.rollno);
    printf( "Name: %s\n", u1.name);

    printf("\nsizeof structure: %d\n", sizeof(s1));
    printf("sizeof union: %d\n",sizeof(u1));
    return 0;
}
```

```
Rollno: 1
Name: Saad
Rollno: 1634954817
Name: Ansari
```

Practical 8

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Aim: Program on pointers.

```c
#include <stdio.h>
int main()
{
    int num1,num2;
    int *a,*b;
    a=& num1;
    b=& num2;
    printf("Enter the value of num1: ");
    scanf("%d",&num1);
    printf("Enter the value of num2: ");
    scanf("%d",&num2);

    printf("Before Swapping: num1=%d, num2=%d\n",*a,*b);
    printf("Address before swapping of num1 %u\nand num2 %u\n",a,b);
    int t;
    t=num1;
    num1=num2;
    num2=t;
    a=& num1;
    b=& num2;
    printf("After Swapping: num1=%d, num2=%d\n",*a,*b);
    printf("Address before swapping of num1 %u\nand num2 %u\n",a,b);
    return 0;
}
```

```
Enter the value of num1: 33
Enter the value of num2: 11
Before Swapping: num1=33, num2=11
Address before swapping of num1 6422288
and num2 6422284
After Swapping: num1=11, num2=33
Address before swapping of num1 6422288
and num2 6422284
```

Practical 9

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Aim: Programs on string manipulations.

Take 2 string from user compare, concatenate and reverse the concatenate string using string manipulation

```c
#include<stdio.h>
#include<string.h>
int main(void)
{
    char str1[50],str2[50],str3[50]=" ";
    int len,mid,tmp,i;
    printf("Enter String 1: ");
    gets(str1);
    printf("Enter String 2: ");
    gets(str2);

    if(strcmp(str1,str2)==0)
    {
        printf("Both are same.\n");
    }
    else
    {
        printf("Both are different.\n");
    }

    strcat(str3,str1);
    strcat(str3," ");
    strcat(str3,str2);
    printf("Concatenated String:%s\n",str3);

    len=strlen(str3);
    mid=len/2;
    for(i=0;i<mid;i++)
    {
        tmp=str3[len-1-i];
        str3[len-1-i]=str3[i];
        str3[i]=tmp;
    }
    printf("Reversed String: %s\n",str3);
    printf("End of code\n");
    return 0;
}
```

```
Enter String 1: C is not an object oriented language
Enter String 2: Python is an object oreinted language
Both are different.
Concatenated String: C is not an object oriented language Python is an object oreinted language
Reversed String: egaugnal detniero tcejbo na si nohtyP egaugnal detneiro tcejbo na ton si C
End of code
```

```
Enter String 1: C is not an object oriented language
Enter String 2: C is not an object oriented language
Both are same.
Concatenated String: C is not an object oriented language C is not an object oriented language
Reversed String: egaugnal detneiro tcejbo na ton si C egaugnal detneiro tcejbo na ton si C
End of code
```

Practical 10

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Aim: Programs on basic file operations.

```c
#include<stdio.h>
#include<string.h>
int main()
{
    FILE *filePointer;
    char dataToBeWritten[100]="This file was generated using file operations in C programming.";
    filePointer=fopen("FileOperation.c","w");
    if(filePointer==NULL)
    {
        printf("FileOperation.c file failed to open.");
    }
    else
    {
        printf("The file is now opened.\n");
        if(strlen(dataToBeWritten)>0)
        {
            fputs(dataToBeWritten,filePointer);
            fputs("\n",filePointer);
        }
        fclose(filePointer);
        printf("Data successfully written in file FileOperation.c\n");
        printf("The file is now closed.");
    }
    return 0;
}
```

```
The file is now opened.
```

C FileOperation.c

```
1   This file was generated using file operations in C programming.
2
```

PRACTICAL 5

Aim: Programs on arrays.

a] Write a program on Addition of 2 Matrix and

```c
#include<stdio.h>
void main()
{
    int a[8][8],b[8][8],c[8][8],i,j;
    printf("Enter Value for First Matrix:\n");
    for (i=0; i<3; i++)
    {
        for (j=0; j<3; j++)
        {
            scanf("%d",&a[i][j]);
        }
    }

    printf("\n");
    printf("Enter value for Second Matrix:\n");
    for (i=0; i<3; i++)
    {
        for (j=0; j<3; j++)
        {
            scanf("%d",&b[i][j]);
        }
    }
    printf("\n");
    printf("\nThe First Matrix is:\n");
    for (i=0; i<3; i++)
    {
        for (j=0; j<3; j++)
        {
            printf(" %d ",a[i][j]);
        }
        printf("\n");
    }
    printf("\n");
    printf("The Second Matrix is:\n");
    for (i=0; i<3; i++)
    {
        for (j=0; j<3; j++)
        {
            printf(" %d ",b[i][j]);
        }
        printf("\n");
    }
    printf("\nAddition of Two Matrix:\n");
    for (i=0; i<3; i++)
    {
        for (j=0; j<3; j++)
        {
            c[i][j]=a[i][j]+b[i][j];
            printf(" %d ",c[i][j]);
        }
        printf("\n");
    }
}
```

```
Enter Value for First Matrix:
1 2 3 4 5 6 7 8 9

Enter value for Second Matrix:
9 8 7 6 5 4 3 2 1


The First Matrix is:
 1  2  3
 4  5  6
 7  8  9

The Second Matrix is:
 9  8  7
 6  5  4
 3  2  1

Addition of Two Matrix:
 10  10  10
 10  10  10
 10  10  10
```

b] Write a program on Multiplication of 2 Matrix

```c
#include<stdio.h>

void main()
{
    int a[8][8],b[8][8],c[8][8],i,j,k;
    int product=0;
    printf("Enter Value for First Matrix:\n");
    for (i=0; i<3; i++)
    {
        for (j=0; j<3; j++)
        {
            scanf("%d",&a[i][j]);
        }
    }
    printf("\n");

    printf("Enter value for Second Matrix:\n");
    for (i=0; i<3; i++)
    {
        for (j=0; j<3; j++)
        {
            scanf("%d",&b[i][j]);
        }
    }
    printf("\n");
    printf("The First Matrix is:\n");
    for (i=0; i<3; i++)
    {
        for (j=0; j<3; j++)
        {
            printf(" %d ",a[i][j]);
        }
        printf("\n");
    }
    printf("\n");
    printf("The Second Matrix is:\n");
    for (i=0; i<3; i++)
    {
        for (j=0; j<3; j++)
        {
            printf(" %d ",b[i][j]);
        }
        printf("\n");
    }

    printf("\nProduct of Two Matrix:\n");
    for (i=0; i<3; i++)
    {
        for (j=0; j<3; j++)
        {
            product=0;
            for (k=0; k<3; k++)
            {
                product=a[i][k]*b[k][j];
            }
            c[i][j]=product;
        }
    }
    for (i=0; i<3; i++)
    {
        for (j=0; j<3; j++)
        {
            printf(" %d ",c[i][j]);
        }
        printf("\n");
    }
}
```

```
Enter Value for First Matrix:
1 2 3 4 5 6 7 8 9

Enter value for Second Matrix:
9 8 7 6 5 4 3 2 1

The First Matrix is:
 1  2  3
 4  5  6
 7  8  9

The Second Matrix is:
 9  8  7
 6  5  4
 3  2  1

Product of Two Matrix:
 9  6  3
 18  12  6
 27  18  9
```