MODULE: 2

SE – Fundamentals of Programming

1.Display This Information using printf.

#include <stdio.h>

main()

{

Printf ("My name is Mahendra Suthar. ");

Prinft ("My birth date is 06-07-2000. ");

Printf ("I am is 23 year old");

Printf ("Sumerpur Pali (Rajasthan) 306902");

}

2.Write a program to make Simple calculator (to make addition, subtraction, multiplication, division and modulo).

#include<stdio.h>

main()

{

int a=100,b=50;

printf ("add %d", a+b);

printf ("sub %d", a-b);

printf ("multi %d", a\*b);

printf ("div %d", a/b);

printf ("per. %d", a%b);

}

3.WAP to find area of circle, rectangle and triangle.

Area of Circle :-

#include<stdio.h>

main()

{

float pai,r,circle;

printf ("enter the value of pai:");

scanf ("%f",&pai);

printf ("enter the value of r:");

scanf ("%f",&r);

printf ("enter the value of r:");

scanf ("%f",&r);

circle=pai\*r\*r;

printf ("circle %f",circle);

}

Area of Rectangle :-

#include<stdio.h>

main()

{

int length,width,rectangle;

printf ("Enter the value of lenght");

scanf ("%d",&length);

printf ("Enter the value of width");

scanf ("%d",&width);

rectangle=length\*width;

printf ("Area of rectangle%d",rectangle);

}

Area of Triangle :-

#include<stdio.h>

main()

{

float h,b,tringle;

printf ("enter the value of h = ");

scanf ("%f",&h);

printf ("enter the value of b = ");

scanf ("%f",&b);

tringle=(h\*b)/2;

printf ("Area of tringle %f",tringle);

}

4. WAP to find simple interest.

#include<stdio.h>

main()

{

float p,r,t,si;

printf("Enter the value of principal:");

scanf("%f",&p);

printf("Enter the value of rate:");

scanf("%f",&r);

printf("Enter the duration of time:");

scanf("%f",&t);

si=(p\*r\*t)/100;

printf("The simple interest is %f",si);

}

5. WAP to check if the given year is a leap year or not.

#include<stdio.h>

main()

{

int year ;

printf ("enter leap year :");

scanf ("%d",&year);

if (year % 4 == 0)

{

Printf ("This is leap year");

}

else

{

Printf ("This is not leap year");

}

}

6. WAP to convert years into days and days into years

#include <stdio.h>

main()

{

int choice;

float years, days;

printf("Choose an option:\n");

printf("1. Convert years to days\n");

printf("2. Convert days to years\n");

scanf("%d", &choice);

switch (choice)

{

case 1:

printf("Enter the number of years : ");

scanf("%f", &years);

days = years \* 365.25;

printf("%f years is approximately %f days \n", years, days);

break;

case 2:

printf("Enter the number of days : ");

scanf("%f", &days);

years = days / 365.25;

printf("%f days is approximately %f years \n", days, years);

break;

default:

printf("Invalid choice \n");

break;

}

}

7. WAP to make simple calculator (operation include Addition, Subtraction, Multiplication, Division, modulo)

#include<stdio.h>

main()

{

int a=100,b=50;

printf ("add %d",a+b);

printf ("\nsub %d",a-b);

printf ("\nmulti %d",a\*b);

printf ("\ndiv %d",a/b);

printf ("\nper. %d",a%b);

}

8. WAP to swap two numbers without using third variable

#include<stdio.h>

Main()

Printf ("Enter the value of a : ");

Scanf ("%d",&a);

Printf ("Enter the value of b : ");

Scanf ("%d",&b);

a=a+b; (10+20=30)

b=a-b; (30-20=10)

a=a-b; (30-10=20)

printf("Swaping value of a: %d",a);

printf("Swaping value of b: %d",b);

}

9. WAP to find number is even or odd using ternary (conditional) operator.

#include<stdio.h>

main()

{

int num;

printf("Enter the value of number");

scanf("%d",&num);

if(num%2==0)

{

printf("this is even number");

}

else

{

printf("this is odd number");

}

}

10. WAP to show

1. Monday to Sunday using switch case

#include<stdio.h>

main()

{

int day;

printf ("Enter the day");

scanf ("%d",&day);

switch (day)

{

case 1:

printf ("monday");

break;

case 2:

printf ("tuesday");

break;

case 3:

printf ("wednwsday");

break;

case 4:

printf ("thursday");

break;

case 5:

printf ("friday");

break;

case 6:

printf ("saterday");

break;

case 7:

printf ("sunday");

break;

default:

printf ("invalid input");

}

}

2. Vowel or Consonant using switch case

#include<stdio.h>

Main()

{

char letter;

printf ("Enter the letter");

scanf ("%c",&letter);

switch (letter)

{

case 'a':

printf("it is a vovel");

break;

case 'e':

printf("it is a vovel");

break;

case 'i':

printf("it is a vovel");

break;

case 'o':

printf("it is a vovel");

break;

case 'u':

printf("it is a vovel");

break;

default:

printf("it is a consonant");

}

}

11.Looping program:

1.WAP to print 972 to 897 using for loop

#include<stdio.h>

main()

{

int i;

for(i=972;i>=897;i--)

{

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

}

printf("\n");

}

2.How many Even numbers are there

#include<stdio.h>

main()

{

int start, end, evenCount = 0;

printf("Enter the starting number: ");

scanf("%d", &start);

printf("Enter the ending number: ");

scanf("%d", &end);

for (int i = start; i <= end; i++)

{

if (i % 2 == 0)

{

evenCount++;

}

}

printf("There are %d even numbers between %d and %d.\n", evenCount, start, end);

}

3. How many odd numbers are there

#include<stdio.h>

int main() {

int arr[]={1,2,3,4,5,6,7,8,9};

int length=sizeof(arr)/sizeof(arr[0]);

int i,oddCount=0;

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

{

if(arr[i]%2!=0)

{

oddCount++;

}

}

printf("Number of odd elements : %d\n", oddCount);

}

4.Sum of even numbers

#include<stdio.h>

main()

{

int i,evensum=0,n;

printf("Enter the value of number : ");

scanf("%d",&n);

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

{

if(i%2==0)

{

printf("%d",i);

evensum=evensum+i;

}

}

printf("\nevensum = %d",evensum);

}

5. Sum of odd numbers

#include<stdio.h>

main()

{

int i,oddsum=0,n;

printf("Enter the value of number : ");

scanf("%d",&n);

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

{

if(i%2==1)

{

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

oddsum=oddsum+i;

}

}

printf("\noddsum = %d",oddsum);

}

6. WAP to print table up to given numbers

#include<stdio.h>

main()

{

int n1,n2;

printf("Enter value : ");

scanf("%d",&n1);

for(n2=1;n2<=10;n2++)

{

printf("\n%d \* %d = %d ",n1,n2,(n1\*n2));

}

}

12.WAP to print factorial of given number

#include<stdio.h>

main()

{

int fectorial=1,i,n;

printf("Enter value of number : ");

scanf("%d",&n);

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

{

printf("%d",i);

fectorial=fectorial\*i;

}

printf("\nfectorial = %d",fectorial);

}

13.WAP to print Fibonacci series up to given numbers

#include <stdio.h>

main()

{

int n, first = 0, second = 1, next, c;

printf("Enter the number of terms\n");

scanf("%d", &n);

printf("First %d terms of Fibonacci series are:\n", n);

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

{

if (c <= 1)

next = c;

else

{

next = first + second;

first = second;

second = next;

}

printf("%d\n", next);

}

}

14. WAP to print number in reverse order e.g.: number = 64728 ---> reverse = 82746

#include <stdio.h>

int main()

{

int n, r = 0;

printf("Please enter a number: ");

scanf("%d",&n);

while (n > 0)

{

r = r \* 10;

r = r + n%10;

n = n/10;

}

printf("Reversed number is = %d: ", r);

}

15.Write a program to find out the max from given number (E.g., No: -1562 Max number is 6)

#include <stdio.h>

int findMaxDigit(int number)

{

int max = -1;

if (number < 0)

{

number = -number;

}

while (number > 0)

{

int digit = number % 10;

if (digit > max)

{

max = digit;

}

number /= 10;

}

return max;

}

int main()

{

int number;

printf("Enter a number: ");

scanf("%d", &number);

int max= findMaxDigit(number);

if (max==-1)

{

printf("Invalid input\n");

}

else

{

printf("maximum digit : %d\n", max);

}

}

16.Write a program make a summation of given number (E.g., 1523 Ans: -11)

#include<stdio.h>

main()

{

int n, sum = 0, r;

printf("Enter a number\n");

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

n != 0;

n = n/10)

{ r = n % 10; sum = sum + r; }

printf("Sum of digits of a number = %d\n", sum);

}

17.Write a program you have to make a summation of first and last Digit.

#include <stdio.h>

main()

{

int n, sum=0, first, last;

printf("Enter number :");

scanf("%d", &n);

last=n%10;

while(n>=10)

{

n=n/10;

}

first=n;

sum = first + last;

printf("Sum of first and last digit = %d", sum);

}

Pattern :-

1

1 0

1 0 1

1 0 1 0

1 0 1 0 1

#include<stdio.h>

main(){

int row,col;

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

for(col=1;col<=row;col++){

if(col%2==0){

printf("0",col);

}

else{

printf("1",col);

}

}

printf("\n"); }

}

A

A B

A B C

A B C D

A B C D E

#include<stdio.h>

main()

{

int row,col;

char a='a';

for(row='A';row<='E';row++)

{

for(col='A';col<=row;col++)

{

printf("%c ",col);

}

printf("\n");

}

}

1

2 3

4 5 6

7 8 9 10

11 12 13 14 15

#include<stdio.h>

main(){

int t,u,count=1;

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

for(u=1;u<=t;u++){

printf("%d ",count);

count++;

}

printf("\n");

}

}

A

B C

D E F

G H I J

K L M N O

#include<stdio.h>

main()

{

int row,col;

char alpha=65;

for(row=1;row<=5;row++)

{

for(col=1;col<=row;col++)

{

printf("%c ",alpha);

alpha++;

}

printf("\n");

}

}

+

+++

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+++++++

+++++++++

#include<stdio.h>

main()

{

int i,j,k,n;

printf("Enter number : ");

scanf("%d",&n);

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

{

for(k=1;k<=(n-i);k++)

{

printf(" ");

}

for(j=1;j<=i;j++)

{

printf("+");

}

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

{

printf("+");

}

printf("\n");

}

}

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#include<stdio.h>

main()

{

int a,b,c,d;

for(a=1;a<=5;a++)

{

for(b=1;b<=a;b++)

{

printf("\*");

}

printf("\n");

}

for(c=1;c<=5;c++)

{

for(d=4;d>=c;d--)

{

printf("\*");

}

printf("\n");

}

}

18. Write a program to find out the max number from given array using function.

#include <stdio.h>

main()

{

int i,arr[]={25,11,7,101,56};

int length=sizeof(arr)/sizeof(arr[0]);

int max=arr[0];

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

{

if(arr[i] > max)

{

max = arr[i];

}

}

printf("Largest element number : %d\n", max);

}

19. WAP of Addition, Subtraction, Multiplication and Division using Switch case.(Must Be Menu Driven)

#include <stdio.h>

main()

{

int choice;

double num1, num2, result;

while (1)

{

printf("Menu:\n");

printf("1. Addition\n");

printf("2. Subtraction\n");

printf("3. Multiplication\n");

printf("4. Division\n");

printf("5. Exit\n");

printf("Enter your choice (1/2/3/4/5): ");

scanf("%d", &choice);

if (choice == 5)

{

printf("Exiting the program. Goodbye!\n");

break; // Exit the program

}

printf("Enter two numbers: ");

scanf("%lf %lf", &num1, &num2);

switch (choice)

{

case 1:

result = num1 + num2;

printf("Result: %.2lf\n", result);

break;

case 2:

result = num1 - num2;

printf("Result: %.2lf\n", result);

break;

case 3:

result = num1 \* num2;

printf("Result: %.2lf\n", result);

break;

case 4:

if (num2 != 0) {

result = num1 / num2;

printf("Result: %.2lf\n", result);

} else {

printf("Error: Division by zero is not allowed.\n");

}

break;

default:

printf("Invalid choice! Please enter a valid option.\n");

}

}

}

20. WAP to find reverse of string using recursion

#include <stdio.h>

void reverseString(char str[], int start, int end)

{

if (start >= end)

{

return;

}

char temp = str[start];

str[start] = str[end];

str[end] = temp;

reverseString(str, start + 1, end - 1);

}

int main() {

char str[100];

printf("Enter a string: ");

gets(str);

int length = 0;

while (str[length] != '\0')

{

length++;

}

reverseString(str, 0, length - 1);

printf("Reversed string: %s\n", str);

}

21. WAP to find factorial using recursion.

#include <stdio.h>

unsigned long long factorial(int n)

{

if (n==0 || n==1)

{

return 1;

}

else

{

return n\*factorial(n-1);

}

}

main()

{

int num;

printf("Enter a non-negative integer: ");

scanf("%d", &num);

if (num < 0)

{

printf("Factorial is not defined for negative numbers.\n");

}

else

{

unsigned long long result = factorial(num);

printf("Factorial of %d is %llu\n", num, result);

}

}

22. WAP to take two Array input from user and sort them in ascending or descending order as per user’s choice.

#include <stdio.h>

#define MAX\_SIZE 100

int main()

{

int arr[MAX\_SIZE];

int size;

int i, j, temp;

printf("Enter size of array: ");

scanf("%d", &size);

printf("Enter elements in array: ");

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

{

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

}

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

{

for(j=i+1; j<size; j++)

{

if(arr[i] > arr[j])

{

temp = arr[i];

arr[i] = arr[j];

arr[j] = temp;

}

}

}

printf("\nElements of array in ascending order: ");

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

{

printf("%d\t", arr[i]);

}

}

23. WAP to make addition, Subtraction and multiplication of two matrix using 2-D Array

#include <stdio.h>

main()

{

int r, c, a[100][100], b[100][100], sum[100][100], i, j;

printf("Enter the number of rows (between 1 and 100): ");

scanf("%d", &r);

printf("Enter the number of columns (between 1 and 100): ");

scanf("%d", &c);

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

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

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

{

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

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

}

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

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

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

{

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

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

}

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

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

{

sum[i][j] = a[i][j] + b[i][j];

}

printf("\nSum of two matrices: \n");

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

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

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

if (j == c - 1)

{

printf("\n\n");

}

}

}

24. WAP Find out length of string without using inbuilt function.

#include<stdio.h>

main()

{

char str[100];

int length = 0;

printf("Enter a string: ");

gets(str);

while (str[length] != '\0')

{

length++;

}

printf("Length of the string: %d\n", length);

}

25. WAP to reverse a string and check that the string is palindrome or not Write a program of structure employee that provides the following.

#include<stdio.h>

#include<string.h>

void reverseString(char str[])

{

int i,length = strlen(str);

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

{

char temp = str[i];

str[i] = str[length - i - 1];

str[length - i - 1] = temp;

}

}

int isPalindrome(char str[])

{

int i,length = strlen(str);

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

{

if (str[i] != str[length - i - 1])

{

return 0; // Not a palindrome

}

}

}

int main()

{

char str[100];

printf("Enter a string: ");

gets(str);

reverseString(str);

printf("Reversed string: %s\n", str);

if (isPalindrome(str))

{

printf("The string is a palindrome.\n");

}

else

{

printf("The string is not a palindrome.\n");

}

}

26. information -print and display empno, empname, address and age.

#include<stdio.h>

struct Employee

{

int empno;

char empname[50];

char address[100];

int age;

};

void inputEmployee(struct Employee \*emp)

{

printf("Enter employee number: ");

scanf("%d", &emp->empno);

printf("Enter employee name: ");

scanf("%s", emp->empname);

printf("Enter employee address: ");

scanf("%s", emp->address);

printf("Enter employee age: ");

scanf("%d", &emp->age);

}

void displayEmployee(const struct Employee \*emp)

{

printf("Employee Number: %d\n", emp->empno);

printf("Employee Name: %s\n", emp->empname);

printf("Employee Address: %s\n", emp->address);

printf("Employee Age: %d\n", emp->age);

}

int main()

{

struct Employee emp;

printf("Enter employee information:\n");

inputEmployee(&emp);

printf("\nEmployee Information:\n");

displayEmployee(&emp);

}

27. Write a program of structure for five employee that provides the followinginformation -print and display empno, empname, address and age.

#include<stdio.h>

struct Employee

{

int empno;

char empname[50];

char address[100];

int age;

};

void inputEmployee(struct Employee \*emp) {

printf("Enter employee number: ");

scanf("%d", &emp->empno);

printf("Enter employee name: ");

scanf("%s", emp->empname);

printf("Enter employee address: ");

scanf("%s", emp->address);

printf("Enter employee age: ");

scanf("%d", &emp->age);

}

void displayEmployee(const struct Employee \*emp) {

printf("\nEmployee Number: %d\n", emp->empno);

printf("Employee Name: %s\n", emp->empname);

printf("Employee Address: %s\n", emp->address);

printf("Employee Age: %d\n", emp->age);

}

int main() {

int i;

struct Employee employees[5];

printf("Enter information for five employees:\n");

for (i = 0; i < 5; i++) {

printf("\nEmployee %d:\n", i + 1);

inputEmployee(&employees[i]);

}

printf("\nEmployee Information for Five Employees:\n");

for (i = 0; i < 5; i++)

{

printf("\nEmployee %d:\n", i + 1);

displayEmployee(&employees[i]); // Display employee data for each employee

}

}

28. WAP to show difference between Structure and Union.

Structure (struct):

* In a structure, each member (variable) has its own memory location.
* Each member can have a different data type.
* Memory is allocated for all members simultaneously, and the size of the structure is the sum of the sizes of its members.
* Structures are used when you want to store and access different types of information simultaneously.

Union:

* In a union, all members share the same memory location.
* All members have the same starting memory address, and only one member can hold a value at a time.
* Unions are used when you want to save memory by sharing the same space for different types of information, and you only need one of them at a time.