//1. Display This Information using printf

//a. Your Name

//b. Your Birth date

//c. Your Age

//d. Your Address

#include<stdio.h>

int main()

{

printf("Enter name:Vinay Patel\n");

printf("Enter birth date:07-04-2005\n");

printf("Enter age:19\n");

printf("Enter address:31 durganagar society silver city vastral-381524\n");

return 0;

}

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

#include<stdio.h>

int main()

{

int a,b,sum;

printf("Enter first number:");

scanf("%d",&a);

printf("Enter second number:");

scanf("%d",&b);

printf("\nAfter the addtion:%d",a+b);

printf("\nAfter the subtraction:%d",a-b);

printf("\nAfter the Multiplication:%d",a\*b);

printf("\nAfter the divison:%f",(float)a/b);

}

//3. WAP to Find Area And Circumference of Circle

#include<stdio.h>

int main()

{

float radius,area;

float circumstance;

printf("Enter a radias:");

scanf("%f",&radius);

area=3.14\*radius\*radius;

circumstance=2\*3.14\*radius;

printf("Area of circle:%f",area);

printf("\nCircumstance of circle:%f",circumstance);

return 0;

}

//4.Find Area of Square formula : a = a2

#include<stdio.h>

int main()

{

int a,area;

printf("Enter a number:");

scanf("%d",&a);

area= a\*a;

printf("Area of Square:%d",area);

return 0;

}

//5.Find Area of Cube formula : a = 6a2

#include<stdio.h>

int main()

{

int a,area;

printf("Enter Number:");

scanf("%d",&a);

area= 6\*a\*a;

printf("Area of Cube:%d",area);

return 0;

}

//6.Find area of Triangle Formula : A = 1/2 × b × h

#include<stdio.h>

int main()

{

int b,h,area;

printf("Enter the base:");

scanf("%d",&b);

printf("Enter the height:");

scanf("%d",&h);

area = 0.5\*b\*h;

printf("Area of Triangle:%d",area);

return 0;

}

//7.Find area of Rectangle Formula : A=wl

#include<stdio.h>

int main()

{

int w,l,area;

printf("Enter the width:");

scanf("%d",&w);

printf("Enter the length:");

scanf("%d",&l);

area=w\*l;

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

return 0;

}

//08.Find circumference of Rectangle formula : C = 4 \* a

#include<stdio.h>

int main()

{

int C,a;

printf("enter the area:");

scanf("%d",&a);

C = 4\*a;

printf("Circumstance of Rectangle:%d",C);

return 0;

}

//09.find circumference of Triangle formula : triangle = a + b + c

#include<stdio.h>

int main()

{

int a,b,c,triangle;

printf("Enter number a:");

scanf("%d",&a);

printf("Enter number b:");

scanf("%d",&b);

printf("Enter number c:");

scanf("%d",&c);

triangle=a+b+c;

printf("Circumstance 0f Triangle:%d",triangle);

return 0;

}

//10.find the area of a rectangular prism formula : A=2(wl+hl+hw)

#include<stdio.h>

int main()

{

int h,l,w,area;

printf("enter the width:");

scanf("%d",&w);

printf("enter the height:");

scanf("%d",&h);

printf("enter the length:");

scanf("%d",&l);

area = 2\*(w\*l+h\*l+h\*w);

printf("Area of rectangle prism:%d",area);

return 0;

}

//11.Find circumference of square formula : C = 4 \* a

#include<stdio.h>

int main()

{

int C,a;

printf("Enter the area:");

scanf("%d",&a);

C = 4\*a;

printf("Circumstance of square:%d",C);

return 0;

}

//12.Accept number of students from user. I need to give 5 apples to each student. How many apples are required?

#include <stdio.h>

int main()

{

int students;

int apples\_per\_student = 5,total\_apples;

// Accept number of students from user

printf("Enter the number of students: ");//2

scanf("%d", &students);

// Calculate total apples required

total\_apples = students \* apples\_per\_student;//2\*5=10

// Display the result

printf("Total number of apples required: %d\n", total\_apples);//10 apples

return 0;

}

//13.Find character value from ascii

#include<stdio.h>

int main()

{

char a;

printf("Enter a character:");

scanf("%c", &a);

printf("ASCII value of %c = %d\n", a,a);//a =97

return 0;

}

//14.Find ascii value of given number

#include<stdio.h>

int main()

{

char b;

printf("enter a value:");

scanf("%c",&b);

printf("Enter the value for converting into ASCII=%c\n",b);

printf("After the Convert into ASCII value=%d",b);

}

//15.Convert school’s name in abbreviated form

#include<stdio.h>

int main()

{

char fname[100],mname[100],lname[20];

printf("Enter School Full Name="); // Shanti Asiantic School

scanf("%s %s %s",&fname,mname,lname);

// For Abbriaviated form S.A.S

printf("Abbriviated Form =%c.%c.%c",fname[0],mname[0],lname[0]);

return 0;

}

//16.Convert country’s name in abbreviate form

#include<stdio.h>

int main()

{

char fname[100],mname[100],slname[100],lname[100];

printf("Enter Country Full Name=");//United States of America

scanf("%s %s %s %s",&fname,mname,slname,lname);

//Abbroiviate form of United States of America

printf("Abbriviated Form =%c.%c.%c",fname[0],mname[0],lname[0]);//U.S.A

return 0;

}

//17. Calculate person’s insurance premium based on salary

#include<stdio.h>

int main()

{

float person\_salary,insurance\_premium;

printf("Person's Salary=");

scanf("%f",&person\_salary);

//insurance premium

insurance\_premium = (person\_salary \* 2) / 100;

printf("Every month plan for insurance premium = %2f",insurance\_premium);

return 0;

}

//18.Calculate person’s Annual salary

#include<stdio.h>

int main()

{

float monthlysalary, annualsalary;

// Prompt the user to enter their monthly salary

printf("Enter your monthly salary: ");

scanf("%f", &monthlysalary);

// Calculate the annual salary

annualsalary = monthlysalary \* 12;

// Display the annual salary

printf("Your annual salary is: %.2f\n", annualsalary);

return 0;

}

//19.Calculate compound interest

#include <stdio.h>

#include <math.h>

int main()

{

float principal, rate, time, compoundInterest;

// Input principal, time, and rate

printf("Enter principal amount: ");

scanf("%f", &principal);

printf("Enter time (in years): ");

scanf("%f", &time);

printf("Enter rate of interest: ");

scanf("%f", &rate);

// Calculate compound interest

compoundInterest = principal \* pow((1 + rate / 100), time);

// Print the result

printf("Compound Interest = %f\n", compoundInterest);

return 0;

}

//20. Accept monthly salary from the user and deduct 10% insurance premium, 10% loan installment find out of remaining salary.

#include<stdio.h>

int main()

{

float person\_salary,loan\_installment,insurance\_premium;

printf("Enter the person salary:");

scanf("%f",&person\_salary);

// for insurance\_premium

insurance\_premium = person\_salary\*10/100;

printf("Deduct from the salary:%f\n",insurance\_premium);

// for Loan Installment

loan\_installment = insurance\_premium\*10/100;

printf("Remaining Salary:%f\n",loan\_installment);

return 0;

}

//21. Accept 2 numbers from user and swap 2 numbers with using 3rd variable and without using 3rd variabl

#include<stdio.h>

// with using third variable

int main()

{

int a,b,temp;

int c,d;

printf("Enter first number a:");

scanf("%d",&a);

printf("Enter second number b:");

scanf("%d",&b);

temp=a;//a empty

a=b;//b empty

b=temp;//temp empty

printf("After the swapping a:%d",a);

printf("\nAfter the swapping b:%d",b);

// without using the third variable

printf("\nEnter the first number:");

scanf("%d",&c);

printf("\nEnter the second number:");

scanf("%d",&d);

c=c+d;

d=c-d;

c=c-d;

printf("\nAfter the swapping first number:%d",c);

printf("\nAfter the swapping second number:%d",d);

return 0;

}

//22. Calculate compound interest (Compound Interest formula:

//a. Formula to calculate compound interest annually is given by:

//Amount= P(1 + R/100)t

//b. Compound Interest = Amount – P

#include<stdio.h>

int main()

{

//1st

float principal, rate, time, compound\_Interest;

// Input principal, time, and rate

printf("Enter principal amount: ");

scanf("%f", &principal);

printf("Enter time (in years): ");

scanf("%f", &time);

printf("Enter rate of interest: ");

scanf("%f", &rate);

compound\_Interest = principal\* pow((1+rate/100),time);

printf("Compound\_Interest=%f\n",compound\_Interest);

//2nd

compound\_Interest = compound\_Interest - principal;

printf("Compound\_Interest=%f\n",compound\_Interest);

return 0;

}

//23. WAP to calculate swap 2 numbers with using of multiplication and division.

#include <stdio.h>

int main()

{

int a, b;

printf("Enter number a: ");

scanf("%d", &a);

printf("Enter number b:");

scanf("%d",&b);

// Swapping using multiplication and division

a = a \* b;

b = a / b;

a = a / b;

printf("\nAfter swapping a:%d",a);

printf("\nAfter swapping b:%d",b);

return 0;

}

//24.Accept 5 employees name and salary and count average and total salary

#include<stdio.h>

int main()

{

ia,b,c,d,e,total\_salary,count\_average;

//1st person

printf("1st.employee Name:Vinay patel\n");

printf("employee salary=");

scanf("%d",&a);

//2nd person

printf("\n2nd.employee Name:Riya patel\n");

printf("employee salary=");

scanf("%d",&b);

// 3rd person

printf("\n3rd.employee Name:Vikalp mehta\n");

printf("employee salary=");

scanf("%d",&c);

//4th person

printf("\n4th.employee Name:Aryan sharma\n");

printf("employee salary=");

scanf("%d",&d);

//5th person

printf("\n5th.employee Name:Parth dasadiya\n");

printf("employee salary=");

scanf("%d",&e);

count\_average = a+b+c+d+e / 5;

printf("Count average:%f",count\_average);

}

//25.Accept 5 expense from user and find average of expense

#include <stdio.h>

int main()

{

float expenses[5];

float sum = 0.0;

int i;

// Accepting 5 expenses from the user

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

{

printf("Enter expense %d: ", i + 1);

scanf("%f", &expenses[i]);

sum += expenses[i];

}

// Calculating the average

float average = sum / 5;

// Displaying the average

printf("The average expense is: %.2f\n", average);

return 0;

}

//26.Convert temperature Fahrenheit to Celsius

#include<stdio.h>

int main()

{

float celsius, fahrenheit;

printf("enter fahreheit:");

scanf("%f",&fahrenheit);

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

printf("coonvert into celsius:%2f",celsius);

return 0;

}

//27.Convert days into months

#include<stdio.h>

int main()

{

int days,month;

printf("Enter the Days:");

scanf("%d",&days);

month = days/30;

printf("Convert days into month:%d",month);

return 0;

}

//28.Convert years into days and months

#include<stdio.h>

int main()

{

int days,years,month;

printf("Enter the years:");

scanf("%d",&years);

days=years \* 365;

printf("Convert into days:%d\n",days);

month = years\*12;

printf("Convert into month:%d",month);

return 0;

}

//29.Convert minutes into seconds and hours

#include<stdio.h>

int main()

{

int minute,second,hours;

printf("Enter the minutes:");

scanf("%d",&minute);

second = minute\*60;

printf("Convert into seconds=%d\n",second);

hours = minute/60;

printf("Convert into hours:%d",hours);

return 0;

}

//30. WAP to convert years into days and days into years

#include<stdio.h>

int main()

{

// years into days

int days,years;

printf("Enter the years:");

scanf("%d",&years);

days = years \* 365;

printf("Convert into days:%d\n",days);

// days into years

printf("Enter the days:");

scanf("%d",&days);

years = days / 365;

printf("Convert into years:%d",years);

return 0;

}

//31. Convert kilometers into meters in c language

#include <stdio.h>

int main() {

float kilometers, meters;

// Asking for input

printf("Enter the distance in kilometers: ");

scanf("%f", &kilometers);

// Converting kilometers to meters

meters = kilometers \* 1000;

// Displaying the result

printf("%.2f kilometers is equal to %.2f meters\n", kilometers, meters);

return 0;

}

//32. Accept 2 numbers and find out its sum check it size

#include<stdio.h>

int main()

{

int value1,value2,sum;

printf("Enter the first value:");

scanf("%d",&value1);

printf("Enter the second value:");

scanf("%d",&value2);

sum = value1+value2;

printf("Sum of the values:%d\n",sum);

printf("Size of sum: %zu bytes\n", sizeof(sum));

return 0;

}

//33. C Program to Read Integer and Print First Three Powers (N^1, N^2, N^3)

#include<stdio.h>

int main ()

{

int a,sum;

printf("Enter the number:");

scanf("%d",&a);

sum = (a,a\*a,a\*a\*a);

printf("print first three power=%d",sum);

return 0;

}

1.Control statements

2.Conditional Statements

//1. Write a C program to accept two integers and check whether they are equal or not

#include<stdio.h>

int main()

{

int num1,num2;

printf("enter the number1:");

scanf("%d",&num1);

printf("enter the number2:");

scanf("%d",&num2);

if (num1==num2)

{

printf("They are equal");

}

else

{

printf("They are not equal");

}

return 0;

}

//2.Write a C program to read the value of an integer m and display the value of n is 1 when m is larger than 0, 0 when m is 0 and -1 when m is less than 0

#include <stdio.h>

int main() {

int m, n;

printf("Input the value of m: ");

scanf("%d", &m);

// Determine the value of n based on the value of m

if (m > 0) {

n = 1;

} else if (m == 0) {

n = 0;

} else {

n = -1;

}

printf("The value of m = %d\n", m);

printf("The value of n = %d\n", n);

return 0;

}

//3. WAP to check if the given year is a leap year or not

#include<stdio.h>

int main()

{

int year;

printf("Enter the year:");

scanf("%d",&year);

if (year%4==0)

{

printf("This is leap year");

}

else

{

printf("This is not leap year");

}

return 0;

}

//4.WAP to make simple calculator (operation include Addition, Subtraction, Multiplication, Division, modulo) using conditional statement

#include <stdio.h>

#include <float.h>

int main()

{

char op;

double a, b, res;

// Read the operator

printf("Enter an operator (+, -, \*, /): ");

scanf("%c", &op);

// Read the two numbers

printf("Enter two operands: ");

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

// Define all four operations in the corresponding

// switch-case

switch (op) {

case '+':

res = a + b;

break;

case '-':

res = a - b;

break;

case '\*':

res = a \* b;

break;

case '/':

res = a / b;

break;

default:

printf("Error! Incorrect Operator Value\n");

res = -DBL\_MAX;

}

if(res!=-DBL\_MAX)

printf("%.2lf", res);

return 0;

}

//5.Check Number Is Positive or Negative

#include<stdio.h>

int main()

{

int a;

printf("enter the number:");

scanf("%d",&a);

if(a>0)

{

printf("This is positive number");

}

else if(a==0)

{

printf("This is neither positive nor negative");

}

else

{

printf("This is negative number");

}

return 0;

}

//6.Find the Character Is Vowel or Not

#include<stdio.h>

int main()

{

char n;

printf("enter the character:");

scanf("%c",&n);

if(n=='A'||n=='E'||n=='I'||n=='O'||n=='E')

{

printf("This is vowels");

}

else if(n=='a' || n=='e' || n=='i' || n=='o' || n=='un')

{

printf("This is vowels");

}

else

{

printf("This is not vowels");

}

return 0;

}

//7.Accept marks from user and check pass or fail

#include<stdio.h>

int main()

{

int a;

printf("Enter the marks:");

scanf("%d",&a);

if (a>=33)

{

printf("The student will pass");

}

else

{

printf("This student will fail ");

}

return 0;

}

//8. WAP to accept the height of a person in centimeters and categorize the person according to their height.

#include<stdio.h>

int main()

{

float height;

printf("Enter the height of a person:");

scanf("%f",&height);

if(height<150.0)

{

printf("Small height");

}

else if(height>=150.0 && height<=165.0)

{

printf("Average height");

}

else if(height>165.0 && height<=195.0)

{

printf("Taller height");

}

else

{

printf("Abnormal height");

}

return 0;

}

//9. C Program to Check Uppercase or Lowercase or Digit or Special Character

#include<stdio.h>

int main()

{

char n;

printf("Enter the character:");

scanf("%c",&n);

if(n>='A'&& n<='Z')

{

printf("This is uppercase");

}

else if(n>='a'&& n<='z')

{

printf("This is lowecase");

}

else if(n>='0'&& n<='9')

{

printf("This is digits");

}

else

{

printf("This is special operators");

}

return 0;

}

//10. WAP to check whether a number is negative, positive or zero.

#include<stdio.h>

int main()

{

int a;

printf("Enter the number:");

scanf("%d",&a);

if(a>0)

{

printf("This is positive number");

}

else if(a==0)

{

printf("This is zero");

}

else

{

printf("This is negative number");

}

return 0;

}

//11. WAP to find number is even or odd using ternary operator

#include<stdio.h>

int main()

{

int a;

printf("Enter the number:");

scanf("%d",&a);

if(a%2=?0)

{

printf("This is Even number");

}

else

{

printf("This is Odd number");

}

return 0;

}

//12.WAP to find maximum number among 3 numbers using ternary operator

#include<stdio.h>

int main()

{

int num1,num2,num3,max;

printf("Enter the number1:");

scanf("%d",&num1);

printf("Enter th number2:");

scanf("%d",&num2);

printf("Enter the number3:");

scanf("%d",&num3);

max = (num1 > num2) ? ((num1 > num3) ? num1 : num3) : ((num2 > num3) ? num2 : num3);

printf("The maximum number is: %d\n", max);

return 0;

}

//13.WAP to find minimum number among 3 numbers using ternary operator

#include<stdio.h>

int main()

{

int num1,num2,num3,min;

printf("Enter the number1:");

scanf("%d",&num1);

printf("Enter the number2:");

scanf("%d",&num2);

printf("Enter the number3:");

scanf("%d",&num3);

//minimum values:

min = (num1 < num2) ? ((num1 < num3) ? num1 : num3) : ((num2 < num3) ? num2 : num3);

printf("The minimum number is: %d\n", min);

return 0;

}

//14.WAP to find the largest of three numbers

#include<stdio.h>

int main()

{

int num1,num2,num3,large;

printf("Enter the number1:");

scanf("%d",&num1);

printf("Enter the number2:");

scanf("%d",&num2);

printf("Enter the number3:");

scanf("%d",&num3);

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

printf("%d is the largest number.\n", num1);

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

printf("%d is the largest number.\n", num2);

else

printf("is the largest number=%d\n", num3);

return 0;

}

//15. Write a C program to determine eligibility for admission to a professional course based on the following criteria Eligibility Criteria : Marks in Maths >=65 and Marks in Phy >=55 and Marks

//>=50 and Total in all three subject >=190 or Total in Maths andysics >=140 -------------------------------------- Input the marks obtained in Physics :65 Input the marks obtained in Chemistry :51 Input the marks

//obtained in Mathematics :72 Total marks of Maths, Physics and Chemistry : 188 Total marks of Maths and Physics : 137 The candidate is not eligible.

#include <stdio.h> // Include the standard input/output header file.

void main()

{

int p, c, m, t, mp; // Declare variables to store marks and totals.

printf("Eligibility Criteria :\n"); // Display eligibility criteria.

printf("Marks in Maths >=65\n");

printf("and Marks in Phy >=55\n");

printf("and Marks in Chem>=50\n");

printf("and Total in all three subject >=190\n");

printf("or Total in Maths and Physics >=140\n");

printf("-------------------------------------\n");

printf("Input the marks obtained in Physics :"); // Prompt user for input.

scanf("%d", &p); // Read and store marks in 'p'.

printf("Input the marks obtained in Chemistry :");

scanf("%d", &c); // Read and store marks in 'c'.

printf("Input the marks obtained in Mathematics :");

scanf("%d", &m); // Read and store marks in 'm'.

printf("Total marks of Maths, Physics and Chemistry : %d\n", m + p + c); // Calculate and display total marks.

printf("Total marks of Maths and Physics : %d\n", m + p); // Calculate and display total marks.

if (m >= 65) // Check if marks in Maths are greater than or equal to 65.

if (p >= 55) // Check if marks in Physics are greater than or equal to 55.

if (c >= 50) // Check if marks in Chemistry are greater than or equal to 50.

if ((m + p + c) >= 190 || (m + p) >= 140) // Check if total marks criteria are met.

printf("The candidate is eligible for admission.\n"); // Print eligibility message.

else

printf("The candidate is not eligible.\n"); // Print ineligibility message.

else

printf("The candidate is not eligible.\n"); // Print ineligibility message.

else

printf("The candidate is not eligible.\n"); // Print ineligibility message.

else

printf("The candidate is not eligible.\n"); // Print ineligibility message.

}

//16. Write a C program to read temperature in centigrade and display a suitable message according to the temperature state below:

//Temp < 0 then Freezing weather

//Temp 0-10 then Very Cold weather

//Temp 10-20 then Cold weather

//Temp 20-30 then Normal in Temp

//Temp 30-40 then Its Hot

//Temp >=40 then Its Very Hot

#include <stdio.h> // Include the standard input/output header file.

void main()

{

int tmp; // Declare a variable to store temperature.

printf("Input days temperature : "); // Prompt user for input.

scanf("%d", &tmp); // Read and store temperature.

if (tmp < 0) // Check if temperature is less than 0.

printf("Freezing weather.\n"); // Print message for freezing weather.

else if (tmp < 10) // Check if temperature is between 0 and 10.

printf("Very cold weather.\n"); // Print message for very cold weather.

else if (tmp < 20) // Check if temperature is between 10 and 20.

printf("Cold weather.\n"); // Print message for cold weather.

else if (tmp < 30) // Check if temperature is between 20 and 30.

printf("Normal in temp.\n"); // Print message for normal temperature.

else if (tmp < 40) // Check if temperature is between 30 and 40.

printf("Its Hot.\n"); // Print message for hot weather.

else // If none of the above conditions are met.

printf("Its very hot.\n"); // Print message for very hot weather.

return 0;

}

//17.Write a C program to check whether a triangle can be formed with the given values for the angles.

#include <stdio.h>

int main()

{

int angle1, angle2, angle3, sum;

// Input three angles of the triangle

printf("Enter three angles of the triangle: ");

scanf("%d %d %d", &angle1, &angle2, &angle3);

// Calculate the sum of the angles

sum = angle1 + angle2 + angle3;

// Check if the sum is 180 and all angles are greater than 0

if (sum == 180 && angle1 > 0 && angle2 > 0 && angle3 > 0) {

printf("The triangle is valid.\n");

} else {

printf("The triangle is not valid.\n");

}

return 0;

}

//18.Write a C program to calculate profit and loss on a transaction.

#include <stdio.h>

int main() {

int cost\_price, selling\_price, result;

// Input cost price

printf("Enter cost price: ");

scanf("%d", &cost\_price);

// Input selling price

printf("Enter selling price: ");

scanf("%d", &selling\_price);

// Calculate profit or loss

result = selling\_price - cost\_price;

if (result > 0) {

printf("Profit: %d\n", result);

} else if (result < 0) {

printf("Loss: %d\n", -result);

} else {

printf("No Profit No Loss.\n");

}

return 0;

}

//19. Write a program in C to calculate and print the electricity bill of a given customer. The customer ID, name, and unit consumed by the user should

//be captured from the keyboard to display the total amount to be paid to the

//customer. The charge are as follow :

//20. Unit 21. Charge/unit

//22. upto 350 23. @1.20

//24. 350 and above but less than 600 25. @1.50

//26. 600 and above but less than 800 27. @1.80

//28. 800 and above 29. @2.00

/\*\*

\* C program to calculate total electricity bill

\*/

#include <stdio.h>

int main()

{

int unit;

float amt, total\_amt, sur\_charge;

/\* Input unit consumed from user \*/

printf("Enter total units consumed: ");

scanf("%d", &unit);

/\* Calculate electricity bill according to given conditions \*/

if(unit <= 50)

{

amt = unit \* 0.50;

}

else if(unit <= 150)

{

amt = 25 + ((unit-50) \* 0.75);

}

else if(unit <= 250)

{

amt = 100 + ((unit-150) \* 1.20);

}

else

{

amt = 220 + ((unit-250) \* 1.50);

}

/\*

\* Calculate total electricity bill

\* after adding surcharge

\*/

sur\_charge = amt \* 0.20;

total\_amt = amt + sur\_charge;

printf("Electricity Bill = Rs. %.2f", total\_amt);

return 0;

}

//21.Write a program in C to read any Month Number in integer and display the number of days for this month.

#include <stdio.h>

int main()

{

int month;

printf("Enter month number (1-12): ");

scanf("%d", &month);

switch(month) {

case 1: case 3: case 5: case 7: case 8: case 10: case 12:

printf("31 days\n");

break;

case 2:

printf("28/29 days\n");

break;

case 4: case 6: case 9: case 11:

printf("30 days\n");

break;

default:

printf("Invalid input! Please enter a month number between 1 and 12.\n");

}

return 0;

}

//22.Write a C program to input basic salary of an employee and calculate its Gross salary according to following:

//Basic Salary <= 10000 : HRA = 20%, DA = 80%

//Basic Salary <= 20000 : HRA = 25%, DA = 90%

//Basic Salary > 20000 : HRA = 30%, DA = 95%

#include <stdio.h>

int main()

{

float basic, gross, da, hra;

/\* Input basic salary of employee \*/

printf("Enter basic salary of an employee: ");

scanf("%f", &basic);

/\* Calculate D.A and H.R.A according to specified conditions \*/

if(basic <= 10000)

{

da = basic \* 0.8;

hra = basic \* 0.2;

}

else if(basic <= 20000)

{

da = basic \* 0.9;

hra = basic \* 0.25;

}

else

{

da = basic \* 0.95;

hra = basic \* 0.3;

}

/\* Calculate gross salary \*/

gross = basic + hra + da;

printf("GROSS SALARY OF EMPLOYEE = %.2f", gross);

return 0;

}

//23.WAP to input the week number and print week day.

#include <stdio.h>

int main()

{

int week;

// Input week number from user

printf("Enter week number (1-7): ");

scanf("%d", &week);

// Print corresponding day of the week

switch(week) {

case 1: printf("Monday"); break;

case 2: printf("Tuesday"); break;

case 3: printf("Wednesday"); break;

case 4: printf("Thursday"); break;

case 5: printf("Friday"); break;

case 6: printf("Saturday"); break;

case 7: printf("Sunday"); break;

default: printf("Invalid input! Please enter week number between 1-7.");

}

return 0;

}

//24.Accept month number and display month name

#include <stdio.h>

int main() {

int month;

printf("Enter the month number (1-12): ");

scanf("%d", &month);

switch (month) {

case 1:

printf("January\n");

break;

case 2:

printf("February\n");

break;

case 3:

printf("March\n");

break;

case 4:

printf("April\n");

break;

case 5:

printf("May\n");

break;

case 6:

printf("June\n");

break;

case 7:

printf("July\n");

break;

case 8:

printf("August\n");

break;

case 9:

printf("September\n");

break;

case 10:

printf("October\n");

break;

case 11:

printf("November\n");

break;

case 12:

printf("December\n");

break;

default:

printf("Invalid month number. Please enter a number between 1 and 12.\n");

break;

}

return 0;

}

//25.Accept the input month number and print number of days in that month.

#include <stdio.h>

int main() {

int month;

// Input month number from user

printf("Enter month number (1-12): ");

scanf("%d", &month);

// Determine the number of days in the month

switch(month) {

case 1: case 3: case 5: case 7: case 8: case 10: case 12:

printf("31 days\n");

break;

case 4: case 6: case 9: case 11:

printf("30 days\n");

break;

case 2:

printf("28 or 29 days\n");

break;

default:

printf("Invalid input! Please enter a month number between 1 and 12.\n");

}

return 0;

}

//27.WAP to show

//i.Monday to Sunday using switch case

//ii.Vowel or Consonant using switch case

#include <stdio.h>

int main() {

int day;

printf("Enter a number (1-7): ");

scanf("%d", &day);

switch(day) {

case 1: printf("Monday\n"); break;

case 2: printf("Tuesday\n"); break;

case 3: printf("Wednesday\n"); break;

case 4: printf("Thursday\n"); break;

case 5: printf("Friday\n"); break;

case 6: printf("Saturday\n"); break;

case 7: printf("Sunday\n"); break;

default: printf("Invalid input! Please enter a number between 1 and 7.\n");

}

return 0;

}

1.Looping Statements

2.Conditional Statements

//1.WAP to print 972 to 897 using for loop

#include<stdio.h>

int main()

{

int i;

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

{

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

}

return 0;

}

//2.WAP to accept 5 numbers from user and display all numbers

#include<stdio.h>

int main()

{

// dynamic

int a[5];

int i;

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

{

printf("enter elements:");

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

}

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

{

printf("\n Elements are:%d",a[i]);

}

return 0;

}

//3.WAP to take 10 no. Input from user find out below values

//a. How many Even numbers are there

//b. How many odd numbers are there

//c. Sum of even numbers

//d. Sum of odd numbers

#include<stdio.h>

int main()

{

int a[10];

int i,oddsum=0,evensum=0,evencount=0,oddcount=0,sum;

for(i=0;i<10;i++)

{

printf("Enter the number:");

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

}

for(i=0;i<10;i++)

{

printf("\n Elements are:%d",a[i]);

}

for(i=0;i<10;i++)

{

if(a[i]%2==0)

{

evencount++;

}

else

{

oddcount++;

}

}

printf("\ntotal even=%d",evencount);

printf("\ntotal odd=%d",oddcount);

for(i=0;i<10;i++)

{

if(a[i]%2==0)

{

sum = a[i]+evensum;

}

else

{

sum=a[i]+oddsum;

}

}

printf("\nsum of even=%d",evensum);

printf("\nsum odd=%d",oddsum);

}

//4.WAP to print table up to given numbers

#include <stdio.h>

int main()

{

int num, range,i;

printf("Enter the number: ");

scanf("%d", &num);

printf("Enter the range: ");

scanf("%d", &range);

// Print the multiplication table

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

{

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

}

return 0;

}

//5.WAP to print factorial of given number

#include <stdio.h>

int main()

{

int n, i;

unsigned long long fact = 1;

printf("Enter an integer: ");

scanf("%d", &n);

if (n < 0)

printf("Error! Factorial of a negative number doesn't exist.\n");

else {

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

fact \*= i;

}

printf("Factorial of %d = %llu\n", n, fact);

}

return 0;

}

//6.WAP to print Fibonacci series up to given numbers

#include <stdio.h>

int main()

{

int n, t1 = 0, t2 = 1, nextTerm;

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

scanf("%d", &n);

printf("Fibonacci Series: %d, %d, ", t1, t2);

for (i = 3; i <= n; ++i)

{

nextTerm = t1 + t2;

printf("%d, ", nextTerm);

t1 = t2;

t2 = nextTerm;

}

return 0;

}

//7.WAP to print number in reverse order e.g.: number = 64728 ---> reverse = 82746

#include <stdio.h>

int main()

{

int n, reverse = 0, remainder;

printf("Enter an integer: ");

scanf("%d", &n);

while (n != 0)

{

remainder = n % 10;

reverse = reverse \* 10 + remainder;

n /= 10;

}

printf("Reversed number = %d\n", reverse);

return 0;

}

//8.Write a program to find out the max from given number (E.g., No: -1562 Max number is 6)

#include <stdio.h>

#include <stdlib.h>

int main()

{

int num, maxDigit = 0, digit;

printf("Enter a number: ");

scanf("%d", &num);

// Convert negative number to positive

num = abs(num);

while (num > 0) {

digit = num % 10;

if (digit > maxDigit) {

maxDigit = digit;

}

num /= 10;

}

printf("Max digit is %d\n", maxDigit);

return 0;

}

//9.Write a program make a summation of given number (E.g., 1523 Ans: -11)

#include <stdio.h>

int main()

{

int num, sum = 0;

printf("Enter a number: ");

scanf("%d", &num);

// Calculate the sum of digits

while (num != 0)

{

sum += num % 10; // Add the last digit to sum

num /= 10; // Remove the last digit

}

// Print the result

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

return 0;

}

//10.Write a program you have to make a summation of first and last Digit. (E.g., 1234 Ans: -5)

#include <stdio.h>

int main()

{

int num, sum=0, firstDigit, lastDigit;

/\* Input a number from user \*/

printf("Enter any number to find sum of first and last digit: ");

scanf("%d", &num);

/\* Find last digit to sum \*/

lastDigit = num % 10;

/\* Copy num to first digit \*/

firstDigit = num;

/\* Find the first digit by dividing num by 10 until first digit is left \*/

while(num >= 10)

{

num = num / 10;

}

firstDigit = num;

/\* Find sum of first and last digit\*/

sum = firstDigit + lastDigit;

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

return 0;

}

//11.Accept 5 names from user at run time.

#include <stdio.h>

int main()

{

char names[5][50],i; // Array to store 5 names, each up to 49 characters long

// Loop to get 5 names from the user

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

{

printf("Enter name %d: ", i + 1);

scanf("%49s", names[i]); // Read a name and store it in the array

}

// Print the names to verify

printf("\nThe names entered are:\n");

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

printf("%s\n", names[i]);

}

return 0;

}

//12.Program of Armstrong Number in C Using For Loop & While Loop

#include <stdio.h>

#include <math.h>

int main()

{

int num, originalNum, remainder, n = 0, result = 0,temp;

printf("Enter an integer: ");

scanf("%d", &num);

originalNum = num;

// Calculate the number of digits

for (temp = num; temp != 0; ++n) {

temp /= 10;

}

// Calculate the sum of the power of digits

for (temp = num; temp != 0; temp /= 10) {

remainder = temp % 10;

result += pow(remainder, n);

}

// Check if the number is an Armstrong number

if (result == num) {

printf("%d is an Armstrong number.\n", num);

} else {

printf("%d is not an Armstrong number.\n", num);

}

return 0;

}

//13.calculate the Factorial of a Given Number using while loop

#include <stdio.h>

int main()

{

int number, i = 1;

unsigned long long factorial = 1; // Using unsigned long long to handle large factorials

printf("Enter a number to calculate its factorial: ");

scanf("%d", &number);

while (i <= number) {

factorial \*= i;

i++;

}

printf("Factorial of %d is: %llu\n", number, factorial);

return 0;

}

//14.Accept 5 numbers from user and find those numbers factorials

#include <stdio.h>

// Function to calculate factorial

unsigned long long factorial(int n)

{

unsigned long long fact = 1,i;

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

fact \*= i;

}

return fact;

}

int main()

{

int numbers[5],i;

unsigned long long results[5];

// Accept 5 numbers from the user

printf("Enter 5 numbers:\n");

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

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

}

// Calculate factorials

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

{

results[i] = factorial(numbers[i]);

}

// Print the results

printf("Factorials of the entered numbers are:\n");

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

printf("Factorial of %d is %llu\n", numbers[i], results[i]);

}

return 0;

}

//15.Calculate sum of 10 numbers using of while loop

#include <stdio.h>

int main()

{

int num, i = 1, sum = 0;

printf("Please enter 10 numbers:\n");

while (i <= 10)

{

printf("Number %d = ", i);

scanf("%d", &num);

sum += num;

i++;

}

printf("The sum of the 10 numbers is: %d\n", sum);

return 0;

}

//16. Calculate the Sum of Natural Numbers Using the While Loop

#include <stdio.h>

int main()

{

int n, i = 1, sum = 0;

// Prompt the user to enter a positive integer

printf("Enter a positive integer: ");

scanf("%d", &n);

// Use a while loop to calculate the sum

while (i <= n) {

sum += i;

i++;

}

// Print the result

printf("Sum = %d\n", sum);

return 0;

}

//17. Calculate 5 numbers from user and calculate number of even and odd using of while loop

#include <stdio.h>

int main()

{

int count = 0, num, evenCount = 0, oddCount = 0;

while (count < 5) {

printf("Enter number %d: ", count + 1);

scanf("%d", &num);

if (num % 2 == 0) {

evenCount++;

} else {

oddCount++;

}

count++;

}

printf("Total even numbers: %d\n", evenCount);

printf("Total odd numbers: %d\n", oddCount);

return 0;

}

//18. Write a C Program to Print the Multiplication Table of N

//i. E.g. 5 \* 1 = 5

//ii. 5 \* 2 = 10

//1. .

//2. .

//iii. 5 \* 10 = 50

#include <stdio.h>

int main()

{

int N, i;

// Prompt the user to enter a number

printf("Enter an integer: ");

scanf("%d", &N);

// Print the multiplication table

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

{

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

}

return 0;

}

//19. Patterns

// character pattern by converting

// number in to character

#include <stdio.h>

int main()

//1st.

{

int i, j;

// Number of rows

int rows = 5;

// Given a number

int number = 65;

// This loop is used to identify

// number of rows

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

{

// This loop is used to identify number

// of columns based on the rows

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

{

// Converting number in to character

char character = (char)(number);

// Printing character to get the

// required pattern

printf("%c ", character);

// Incrementing number value so

// that it will print the next

// character

number++;

}

printf("\n");

}

//2nd.

// C program to print the full pyramid pattern of stars

#include <stdio.h>

int main()

{

int rows = 5;

// first loop to print all rows

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

// inner loop 1 to print white spaces

for (int j = 0; j < 2 \* (rows - i) - 1; j++) {

printf(" ");

}

// inner loop 2 to print star \* character

for (int k = 0; k < 2 \* i + 1; k++) {

printf("\* ");

}

printf("\n");

}

return 0;

}

//3rd.

// C Program to print the Floyd's Triangle

#include <stdio.h>

int main()

{

int rows = 5;

int n = 1,i,j;

// outer loop to print all rows

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

// innter loop to print abphabet in each row

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

printf("%d ", n++);

}

printf("\n");

}

return 0;

}

//4th.

// C program to print continuous

// character pattern by converting

// number in to character

#include <stdio.h>

// Driver code

int main()

{

int i, j;

// Number of rows

int rows = 5;

// Given a number

int number = 65;

// This loop is used to identify

// number of rows

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

{

// This loop is used to identify number

// of columns based on the rows

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

{

// Converting number in to character

char character = (char)(number);

// Printing character to get the

// required pattern

printf("%c ", character);

// Incrementing number value so

// that it will print the next

// character

number++;

}

printf("\n");

}

return 0;

}

//5th.

// C program to print right half pyramid pattern of

// alphabets

#include <stdio.h>

int main()

{

int rows = 5,i,j;

// first loop for printing rows

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

// second loop for printing alphabets in each rows

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

printf("%c ", 'A' + j);

}

printf("\n");

}

return 0;

}

//6th.

#include <stdio.h>

int main() {

int n = 5,i,j; // Number of rows

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

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

printf("%d", j % 2);

}

printf("\n");

}

return 0;

}

//7th.

//22.Accept 3 numbers from user using while loop and check each numbers palindrome

#include <stdio.h>

// Function to check if a number is a palindrome

int isPalindrome(int num) {

int original = num, reversed = 0, remainder;

while (num != 0) {

remainder = num % 10;

reversed = reversed \* 10 + remainder;

num /= 10;

}

return original == reversed;

}

int main()

{

int count = 0, num;

while (count < 3) {

printf("Enter number %d: ", count + 1);

scanf("%d", &num);

if (isPalindrome(num)) {

printf("%d is a palindrome.\n", num);

} else {

printf("%d is not a palindrome.\n", num);

}

count++;

}

return 0;

}

//23. C Program to Reverse a Number Using FOR Loop Series Program:

#include <stdio.h>

int main()

{

int num, reversedNum = 0, remainder;

printf("Enter an integer: ");

scanf("%d", &num);

for (; num != 0; num /= 10) {

remainder = num % 10;

reversedNum = reversedNum \* 10 + remainder;

}

printf("Reversed Number: %d\n", reversedNum);

return 0;

}

//24. 1 + 2 + 3 + 4 + 5 + ... + n

#include <stdio.h>

int main()

{

int n, sum = 0,i;

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

scanf("%d", &n);

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

{

sum += i;

}

printf("The sum of the series is: %d\n", sum);

return 0;

}

//25. (1\*1) + (2\*2) + (3\*3) + (4\*4) + (5\*5) + ... + (n\*n)

// C program to calculate the following series

#include <stdio.h>

// Function to calculate the following series

int Series(int n)

{

int i;

int sums = 0;

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

sums += (i \* i);

return sums;

}

// Driver Code

int main()

{

int n = 3;

int res = Series(n);

printf("%d", res);

}

//26. (1)+ (1+2) + (1+2+3) + (1+2+3+4) + ... + (1+2+3+4+...+n)

#include<stdio.h>

int main()

{

int n, sum,i,j;

printf("Please enter an integer, n = ");

scanf("%d", &n);

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

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

sum = sum + n;

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

return 0;

}

//27. 1/2 - 2/3 + 3/4 - 4/5 + 5/6 .......... n

#include <stdio.h>

int main() {

int n;

double sum = 0.0;

// Input the value of n

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

scanf("%d", &n);

// Calculate the sum of the series

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

if (i % 2 == 0) {

sum -= (double)i / (i + 1);

} else {

sum += (double)i / (i + 1);

}

}

// Print the result

printf("The sum of the series is: %lf\n", sum);

return 0;

}

1.Functions

2.Array

//1.Write a program to find out the max number from given array using function

#include <stdio.h>

// Function to find the maximum number in an array

int findMax(int arr[], int n){

int max = arr[0],i;

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

if (arr[i] > max) {

max = arr[i];

}

}

return max;

}

int main() {

int n;

printf("Enter the number of elements in the array: ");

scanf("%d", &n);

int arr[n],i;

printf("Enter %d elements:\n", n);

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

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

}

int max = findMax(arr, n);

printf("The maximum number in the array is: %d\n", max);

return 0;

}

//2. WAP of Addition, Subtraction, Multiplication and Division using Switch case.(Must Be Menu Driven)

#include <stdio.h>

int main()

{

int num1, num2, choice;

float result;

while (1)

{

// Displaying the menu

printf("\nMenu:\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: ");

scanf("%d", &choice);

if (choice == 5)

{

break; // Exit the loop if the user chooses to exit

}

// Taking input for the numbers

printf("Enter two numbers: ");

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

switch (choice) {

case 1:

result = num1 + num2;

printf("Result: %d + %d = %.2f\n", num1, num2, result);

break;

case 2:

result = num1 - num2;

printf("Result: %d - %d = %.2f\n", num1, num2, result);

break;

case 3:

result = num1 \* num2;

printf("Result: %d \* %d = %.2f\n", num1, num2, result);

break;

case 4:

if (num2 != 0)

{

result = (float)num1 / num2;

printf("Result: %d / %d = %.2f\n", num1, num2, result);

}

else

{

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

}

break;

default:

printf("Invalid choice. Please try again.\n");

}

}

return 0;

}

//3. WAP to find reverse of string using recursion

#include <stdio.h>

#include <string.h>

void reverseString(char \*str, int start, int end) {

if (start >= end) {

return;

}

// Swap characters

char temp = str[start];

str[start] = str[end];

str[end] = temp;

// Recursive call

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

}

int main() {

char str[100];

printf("Enter a string: ");

fgets(str, sizeof(str), stdin);

// Remove newline character from fgets

str[strcspn(str, "\n")] = '\0';

reverseString(str, 0, strlen(str) - 1);

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

return 0;

}

//4. WAP to find factorial using recursion

#include <stdio.h>

// Function to calculate factorial using recursion

long int factorial(int n)

{

if (n >= 1)

return n \* factorial(n - 1);

else

return 1;

}

int main()

{

int n;

printf("Enter a positive integer: ");

scanf("%d", &n);

printf("Factorial of %d = %ld\n", n, factorial(n));

return 0;

}

//5. WAP to take two Array input from user and sort them in ascending or descending order as per user’s choice

#include <stdio.h>

void sortArray(int arr[], int size, int order)

{

int temp,i,j;

for ( i = 0; i < size - 1; i++)

{

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

{

if ((order == 1 && arr[i] > arr[j]) || (order == 2 && arr[i] < arr[j]))

{

temp = arr[i];

arr[i] = arr[j];

arr[j] = temp;

}

}

}

}

void printArray(int arr[], int size){

int i;

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

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

}

printf("\n");

}

int main() {

int size1, size2, order;

printf("Enter the size of the first array: ");

scanf("%d", &size1);

int arr1[size1],i;

printf("Enter the elements of the first array: ");

for ( i = 0; i < size1; i++) {

scanf("%d", &arr1[i]);

}

printf("Enter the size of the second array: ");

scanf("%d", &size2);

int arr2[size2];

printf("Enter the elements of the second array: ");

for (i = 0; i < size2; i++) {

scanf("%d", &arr2[i]);

}

printf("Enter 1 for ascending order or 2 for descending order: ");

scanf("%d", &order);

sortArray(arr1, size1, order);

sortArray(arr2, size2, order);

printf("Sorted first array: ");

printArray(arr1, size1);

printf("Sorted second array: ");

printArray(arr2, size2);

return 0;

}

//6. WAP to make addition, Subtraction and multiplication of two matrix using 2-D Array

#include <stdio.h>

void addMatrices(int rows, int cols, int a[rows][cols], int b[rows][cols], int result[rows][cols])

{

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

for (int j = 0; j < cols; j++) {

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

}

}

}

void subtractMatrices(int rows, int cols, int a[rows][cols], int b[rows][cols], int result[rows][cols])

{

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

for (int j = 0; j < cols; j++) {

result[i][j] = a[i][j] - b[i][j];

}

}

}

void multiplyMatrices(int rowsA, int colsA, int a[rowsA][colsA], int rowsB, int colsB, int b[rowsB][colsB], int result[rowsA][colsB])

{

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

for (int j = 0; j < colsB; j++) {

result[i][j] = 0;

for (int k = 0; k < colsA; k++) {

result[i][j] += a[i][k] \* b[k][j];

}

}

}

}

void printMatrix(int rows, int cols, int matrix[rows][cols])

{

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

for (int j = 0; j < cols; j++) {

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

}

printf("\n");

}

}

int main()

{

int rows = 2, cols = 2;

int a[2][2] = {{1, 2}, {3, 4}};

int b[2][2] = {{5, 6}, {7, 8}};

int result[2][2];

printf("Matrix A:\n");

printMatrix(rows, cols, a);

printf("Matrix B:\n");

printMatrix(rows, cols, b);

addMatrices(rows, cols, a, b, result);

printf("Addition of A and B:\n");

printMatrix(rows, cols, result);

subtractMatrices(rows, cols, a, b, result);

printf("Subtraction of A and B:\n");

printMatrix(rows, cols, result);

multiplyMatrices(rows, cols, a, rows, cols, b, result);

printf("Multiplication of A and B:\n");

printMatrix(rows, cols, result);

return 0;

}

//7. WAP Find out length of string without using inbuilt function

#include <stdio.h>

int main()

{

char str[100];

int length = 0;

// Accepting input

printf("Enter a string: ");

scanf("%s", str);

// Loop through the string until the null terminator is encountered

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

length++;

}

// Print the length of the string

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

return 0;

}

//9.WAP to show difference between Structure and Union.

#include <stdio.h>

// Define a structure

struct Book {

char title[50];

double price;

};

// Define a union

union Data {

int i;

float f;

};

int main() {

// Using structure

struct Book book1;

book1.price = 500.50;

printf("Structure - Book Price: %.2f\n", book1.price);

// Using union

union Data data;

data.i = 10;

printf("Union - Data.i: %d\n", data.i);

data.f = 220.5;

printf("Union - Data.f: %.2f\n", data.f);

// Notice how the union overwrites the same memory location

printf("Union - Data.i after setting Data.f: %d\n", data.i);

return 0;

}

//10.WAP to perform Palindrome number using for loop and function

#include <stdio.h>

// Function to check if a number is a palindrome

int isPalindrome(int num) {

int originalNum = num;

int reversedNum = 0;

int remainder;

// Loop to reverse the digits of the number

for (; num != 0; num /= 10) {

remainder = num % 10;

reversedNum = reversedNum \* 10 + remainder;

}

// Check if the original number is equal to the reversed number

return originalNum == reversedNum;

}

int main() {

int number;

printf("Enter a number: ");

scanf("%d", &number);

if (isPalindrome(number)) {

printf("%d is a palindrome number.\n", number);

} else {

printf("%d is not a palindrome number.\n", number);

}

return 0;

}

//11. WAP to accept 5 numbers from user and display in reverse order using for loop and array

#include <stdio.h>

int main() {

int numbers[5]; // Array to store the numbers

int i;

// Accept 5 numbers from the user

printf("Enter 5 numbers:\n");

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

printf("Number %d: ", i + 1);

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

}

// Display the numbers in reverse order

printf("Numbers in reverse order:\n");

for(i = 4; i >= 0; i--) {

printf("%d\n", numbers[i]);

}

return 0;

}

//12.WAP to accept 5 students name and store it in array

#include <stdio.h>

int main() {

char names[5][50]; // Array to store 5 names, each up to 49 characters long

int i;

// Accepting names from the user

printf("Enter the names of 5 students:\n");

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

printf("Student %d: ", i + 1);

scanf("%49s", names[i]); // Using %49s to prevent buffer overflow

}

// Displaying the names

printf("\nThe names of the students are:\n");

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

printf("Student %d: %s\n", i + 1, names[i]);

}

return 0;

}

//13. WAP to accept 5 numbers from user and check entered number is even or odd using of array

#include <stdio.h>

int main() {

int numbers[5];

int i;

// Accept 5 numbers from the user

printf("Enter 5 numbers:\n");

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

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

}

// Check if each number is even or odd

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

if(numbers[i] % 2 == 0) {

printf("%d is even.\n", numbers[i]);

} else {

printf("%d is odd.\n", numbers[i]);

}

}

return 0;

}

//14. Perform 2D matrix array

#include <stdio.h>

int main()

{

// Declare a 2D array (matrix) with 3 rows and 3 columns

int matrix[3][3];

// Initialize the matrix with values

int value = 1;

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

for (int j = 0; j < 3; j++) {

matrix[i][j] = value++;

}

}

// Print the matrix

printf("The 3x3 matrix is:\n");

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

for (int j = 0; j < 3; j++) {

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

}

printf("\n");

}

return 0;

}

//15.Store 5 numbers in array and sort it in ascending order

#include <stdio.h>

int main() {

int arr[5];

int i, j, temp;

// Input 5 numbers

printf("Enter 5 numbers:\n");

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

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

}

// Sorting the array in ascending order

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

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

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

temp = arr[i];

arr[i] = arr[j];

arr[j] = temp;

}

}

}

// Printing the sorted array

printf("Numbers in ascending order:\n");

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

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

}

return 0;

}

//16.Accept 5 numbers from user and perform sum of array

#include <stdio.h>

int main() {

int arr[5]; // Array to store 5 numbers

int sum = 0; // Variable to store the sum

int i;

// Accept 5 numbers from the user

printf("Enter 5 numbers:\n");

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

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

}

// Calculate the sum of the array elements

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

sum += arr[i];

}

// Print the sum

printf("Sum of the array elements: %d\n", sum);

return 0;

}

//17.WAP to show difference between Structure and Union

#include <stdio.h>

// Define a structure

struct Book {

char title[50];

double price;

};

// Define a union

union Data {

int i;

float f;

};

int main() {

// Create a structure variable

struct Book book1;

// Assign values to the structure members

snprintf(book1.title, sizeof(book1.title), "C Programming");

book1.price = 299.99;

// Print structure members

printf("Structure - Book Title: %s\n", book1.title);

printf("Structure - Book Price: %.2f\n", book1.price);

// Create a union variable

union Data data;

// Assign values to the union members

data.i = 10;

printf("Union - Data.i: %d\n", data.i);

data.f = 220.5;

printf("Union - Data.f: %.2f\n", data.f);

// Notice that assigning a value to data.f overwrites data.i

printf("Union - Data.i after assigning to Data.f: %d\n", data.i);

return 0;

}

1.String program

//1. Write a program in C to find the length of a string without using library functions.

#include <stdio.h>

int main() {

char str[100];

int length = 0;

printf("Enter a string: ");

gets(str); // Read the string from user input

// Loop through the string until the null character is encountered

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

length++;

}

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

return 0;

}

//2. Write a program in C to separate individual characters from a string.

#include <stdio.h>

int main() {

char str[100]; // Declares a string of size 100

int i = 0; // Initialize a variable to store the index of the string

printf("Enter a string: ");

fgets(str, sizeof(str), stdin); // Read a string from the standard input

printf("The characters of the string are:\n");

while (str[i] != '\0') { // Loop until the null terminator is encountered

printf("%c ", str[i]); // Print each character

i++; // Move to the next character in the string

}

return 0; // Return 0 to indicate successful execution of the program

}

//3. Write a program in C to print individual characters of a string in reverse order

#include <stdio.h>

#include <string.h>

int main() {

char str[100]; // Declare a string of size 100

int length, i;

printf("Enter a string: ");

fgets(str, sizeof(str), stdin); // Read the string from the user

length = strlen(str); // Calculate the length of the string

printf("The characters of the string in reverse order are:\n");

for (i = length - 1; i >= 0; i--) {

printf("%c", str[i]); // Print each character in reverse order

}

return 0;

}

//4.Write a program in C to count the total number of words in a string.

#include <stdio.h>

#include <string.h>

int main() {

char str[100];

int i, totalWords = 1;

printf("Please enter any string: ");

gets(str);

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

{

if(str[i] == ' ' || str[i] == '\n' || str[i] == '\t')

{

totalWords++;

}

}

printf("The total number of words in this string is: %d\n", totalWords);

return 0;

}

//5. Write a program in C to compare two strings without using string library functions.

#include <stdio.h>

int compareStrings(char \*str1, char \*str2) {

int i = 0;

while (str1[i] != '\0' && str2[i] != '\0') {

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

return str1[i] - str2[i];

}

i++;

}

return str1[i] - str2[i];

}

int main() {

char str1[100], str2[100];

printf("Enter the first string: ");

gets(str1);

printf("Enter the second string: ");

gets(str2);

int result = compareStrings(str1, str2);

if (result == 0) {

printf("The strings are equal.\n");

} else if (result < 0) {

printf("The first string is less than the second string.\n");

} else {

printf("The first string is greater than the second string.\n");

}

return 0;

}

//6. Write a program in C to count the total number of alphabets, digits and special characters in a string.

#include <stdio.h>

#define MAX\_SIZE 100 // Maximum string size

int main()

{

char str[MAX\_SIZE];

int alphabets, digits, special, i;

// Initialize counters

alphabets = digits = special = i = 0;

// Input string from user

printf("Enter any string: ");

gets(str);

// Check each character of the string

while (str[i] != '\0') {

if ((str[i] >= 'a' && str[i] <= 'z') || (str[i] >= 'A' && str[i] <= 'Z')) {

alphabets++;

} else if (str[i] >= '0' && str[i] <= '9') {

digits++;

} else {

special++;

}

i++;

}

// Print the counts

printf("Alphabets = %d\n", alphabets);

printf("Digits = %d\n", digits);

printf("Special characters = %d\n", special);

return 0;

}

//7. Write a program in C to copy one string to another string.

#include <stdio.h>

int main()

{

char source[1000], destination[1000];

int i;

printf("Enter any string: ");

gets(source); // Note: gets() is unsafe, consider using fgets() in real applications

// Copying string

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

destination[i] = source[i];

}

destination[i] = '\0'; // Null-terminate the destination string

printf("Original string: %s\n", source);

printf("Copied string: %s\n", destination);

return 0;

}

//8. Write a program in C to count the total number of vowels or consonants in a string.

#include <stdio.h>

// Function to count number

// of vowels and consonant

void count\_vowels\_and\_consonant(char\* str)

{

// Declare the variable vowels and consonant

int vowels = 0, consonants = 0;

int i;

char ch;

// Take each character from this string to check

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

ch = str[i];

// If this character is a vowel,

// increment the count of vowels

if (ch == 'a' || ch == 'e'

|| ch == 'i' || ch == 'o'

|| ch == 'u' || ch == 'A'

|| ch == 'E' || ch == 'I'

|| ch == 'O' || ch == 'U')

vowels++;

// If this character is a space

// skip it

else if (ch == ' ')

continue;

else

// Else increment the count of consonants

consonants++;

}

// Print the total count of vowels and consonants

printf("\nVowels: %d", vowels);

printf("\nConsonants: %d", consonants);

}

// Driver function.

int main()

{

char\* str = "hello my name is vinay";

printf("String: %s", str);

count\_vowels\_and\_consonant(str);

return 0;

}

//9. Write a program in C to find the maximum number of characters in a string.

#include <stdio.h>

#include <string.h>

int main() {

char str[100], result;

int i, len;

int max = -1;

int freq[256] = {0}; // Array to store frequency of characters

printf("Please enter any string: ");

gets(str); // Read the input string

len = strlen(str); // Get the length of the string

// Calculate frequency of each character

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

freq[(int)str[i]]++;

}

// Find the character with the maximum frequency

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

if(max < freq[(int)str[i]]) {

max = freq[(int)str[i]];

result = str[i];

}

}

printf("The maximum occurring character in the given string is '%c'\n", result);

return 0;

}

//10. Write a program in C to extract a substring from a given string

#include <stdio.h>

void substring(char \*source, int start, int length, char \*dest) {

int i;

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

dest[i] = source[start + i];

}

dest[i] = '\0'; // Null-terminate the destination string

}

int main() {

char str[100], sub[100];

int start, length;

printf("Enter the string: ");

fgets(str, sizeof(str), stdin);

printf("Enter the starting position: ");

scanf("%d", &start);

printf("Enter the length of the substring: ");

scanf("%d", &length);

substring(str, start, length, sub);

printf("The extracted substring is: %s\n", sub);

return 0;

}

//11. Write a program in C to read a sentence and replace lowercase characters with uppercase and vice versa.

#include <stdio.h>

#include <ctype.h>

int main()

{

char str[100];

int i;

// Prompt the user to enter a sentence

printf("Enter a sentence: ");

fgets(str, sizeof(str), stdin);

// Iterate through each character of the string

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

// Check if the character is lowercase

if (islower(str[i])) {

str[i] = toupper(str[i]);

}

// Check if the character is uppercase

else if (isupper(str[i])) {

str[i] = tolower(str[i]);

}

}

// Print the modified string

printf("Modified sentence: %s", str);

return 0;

}

//12. Write a program in C to find the number of times a given word 'is' appears in the given string.

#include <stdio.h>

#include <string.h>

int countOccurrences(char \*str, char \*word)

{

int count = 0;

char \*pos = str;

// Loop through the string to find all occurrences of the word

while ((pos = strstr(pos, word)) != NULL) {

// Check if the found word is a standalone word

if ((pos == str || \*(pos - 1) == ' ') && (\*(pos + strlen(word)) == ' ' || \*(pos + strlen(word)) == '\0')) {

count++;

}

pos += strlen(word);

}

return count;

}

int main() {

char str[100];

printf("Enter a string: ");

fgets(str, sizeof(str), stdin);

// Remove newline character from the input string if present

str[strcspn(str, "\n")] = '\0';

char word[] = "is";

int occurrences = countOccurrences(str, word);

printf("The word '%s' appears %d times in the given string.\n", word, occurrences);

return 0;

}

//13. Write a program in C to remove characters from a string except alphabets.

#include <stdio.h>

int main() {

char str[100];

int i, j;

// Accepting input

printf("Enter a string: ");

fgets(str, sizeof(str), stdin);

// Iterating each character and removing non-alphabetical characters

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

while (!( (str[i] >= 'a' && str[i] <= 'z') || (str[i] >= 'A' && str[i] <= 'Z') || str[i] == '\0')) {

for (j = i; str[j] != '\0'; ++j) {

str[j] = str[j + 1];

}

str[j] = '\0';

}

}

// Printing output

printf("After removing non-alphabetical characters, the string is: ");

puts(str);

return 0;

}

//14.Write a program in C to combine two strings manually

#include <stdio.h>

int main()

{

char str1[100], str2[100];

int i, j;

// Input the first string

printf("Enter the first string: ");

gets(str1);

// Input the second string

printf("Enter the second string: ");

gets(str2);

// Find the length of the first string

for (i = 0; str1[i] != '\0'; i++);

// Concatenate the second string to the first string

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

str1[i] = str2[j];

}

// Null-terminate the concatenated string

str1[i] = '\0';

// Output the concatenated string

printf("After concatenation: %s\n", str1);

return 0;

}

//15. Write a program in C to find the largest and smallest words in a string

#include <stdio.h>

#include <string.h>

#include <ctype.h>

int main() {

char str[100], word[20], largest[20], smallest[20], c;

int i = 0, j = 0, firstWord = 1;

printf("Enter a string: ");

while ((c = getchar()) != '\n' && i < sizeof(str) - 1) {

if (isalnum(c) || isspace(c)) {

str[i++] = c;

}

}

str[i] = '\0';

for (i = 0; i < strlen(str); i++) {

while (i < strlen(str) && !isspace(str[i]) && isalnum(str[i])) {

word[j++] = str[i++];

}

if (j != 0) {

word[j] = '\0';

if (firstWord) {

firstWord = 0;

strcpy(largest, word);

strcpy(smallest, word);

} else {

if (strlen(word) > strlen(largest)) {

strcpy(largest, word);

}

if (strlen(word) < strlen(smallest)) {

strcpy(smallest, word);

}

}

j = 0;

}

}

printf("The largest word is '%s'\n", largest);

printf("The smallest word is '%s'\n", smallest);

return 0;

}