DAY 18

1. Write a program to find the square root of a number.

#include <stdio.h>

#include <math.h>

int main() {

double num, result;

printf("Enter a number: ");

scanf("%lf", &num);

result = sqrt(num);

printf("Square root = %.2lf\n", result);

return 0;

}

2. Write a program to calculate the value of sin(x) using series expansion.

#include <stdio.h>

#include <math.h>

int main() {

double x, term, sum = 0;

int i, n, sign = 1, fact;

printf("Enter angle in degrees: ");

scanf("%lf", &x);

x = x \* M\_PI / 180; // convert to radians

printf("Enter number of terms: ");

scanf("%d", &n);

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

fact = 1;

for (int j = 1; j <= 2 \* i + 1; j++) fact \*= j;

term = sign \* pow(x, 2 \* i + 1) / fact;

sum += term;

sign \*= -1;

}

printf("sin(x) ≈ %.5lf\n", sum);

return 0;

}

3. Write a program to calculate the value of cos(x) using series expansion.

#include <stdio.h>

#include <math.h>

int main() {

double x, term, sum = 0;

int i, n, sign = 1, fact;

printf("Enter angle in degrees: ");

scanf("%lf", &x);

x = x \* M\_PI / 180; // radians

printf("Enter number of terms: ");

scanf("%d", &n);

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

fact = 1;

for (int j = 1; j <= 2 \* i; j++) fact \*= j;

term = sign \* pow(x, 2 \* i) / fact;

sum += term;

sign \*= -1;

}

printf("cos(x) ≈ %.5lf\n", sum);

return 0;

}

4. Write a program to calculate the value of e^x using series.

#include <stdio.h>

#include <math.h>

int main() {

double x, sum = 1;

int i, n, fact;

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

scanf("%lf", &x);

printf("Enter number of terms: ");

scanf("%d", &n);

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

fact = 1;

for (int j = 1; j <= i; j++) fact \*= j;

sum += pow(x, i) / fact;

}

printf("e^%.2lf ≈ %.5lf\n", x, sum);

return 0;

}

5. Write a program to compute the compound interest

#include <stdio.h>

#include <math.h>

int main() {

double p, r, t, ci;

printf("Enter principal, rate, time: ");

scanf("%lf %lf %lf", &p, &r, &t);

ci = p \* pow((1 + r / 100), t) - p;

printf("Compound Interest = %.2lf\n", ci);

return 0;

}

. 6. Write a program to compute the simple interest.

#include <stdio.h>

int main() {

double p, r, t, si;

printf("Enter principal, rate, time: ");

scanf("%lf %lf %lf", &p, &r, &t);

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

printf("Simple Interest = %.2lf\n", si);

return 0;

}

7. Write a program to solve a quadratic equation

#include <stdio.h>

#include <math.h>

int main() {

double a, b, c, d, root1, root2;

printf("Enter coefficients a, b, c: ");

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

d = b \* b - 4 \* a \* c;

if (d > 0) {

root1 = (-b + sqrt(d)) / (2 \* a);

root2 = (-b - sqrt(d)) / (2 \* a);

printf("Roots are real: %.2lf and %.2lf\n", root1, root2);

} else if (d == 0) {

root1 = -b / (2 \* a);

printf("Roots are equal: %.2lf\n", root1);

} else {

printf("Roots are imaginary.\n");

}

return 0;

}.

8. Write a program to calculate area and circumference of a circle.

#include <stdio.h>

#define PI 3.14159

int main() {

double r, area, circum;

printf("Enter radius: ");

scanf("%lf", &r);

area = PI \* r \* r;

circum = 2 \* PI \* r;

printf("Area = %.2lf\n", area);

printf("Circumference = %.2lf\n", circum);

return 0;

}

9. Write a program to calculate area of triangle using Heron’s formula.

#include <stdio.h>

#include <math.h>

int main() {

double a, b, c, s, area;

printf("Enter sides a, b, c: ");

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

s = (a + b + c) / 2;

area = sqrt(s \* (s - a) \* (s - b) \* (s - c));

printf("Area = %.2lf\n", area);

return 0;

}

10. Write a program to convert Celsius to Fahrenheit and vice versa

#include <stdio.h>

int main() {

double c, f;

int choice;

printf("1. Celsius to Fahrenheit\n2. Fahrenheit to Celsius\n");

printf("Enter your choice: ");

scanf("%d", &choice);

if (choice == 1) {

printf("Enter Celsius: ");

scanf("%lf", &c);

f = (c \* 9 / 5) + 32;

printf("Fahrenheit = %.2lf\n", f);

} else if (choice == 2) {

printf("Enter Fahrenheit: ");

scanf("%lf", &f);

c = (f - 32) \* 5 / 9;

printf("Celsius = %.2lf\n", c);

} else {

printf("Invalid choice.\n");

}

return 0;

}