/\*

Q1) Find the area of a circle.

\*/

#include <stdio.h>

#define PI 3.14159

int main() {

float r, area;

printf("Enter radius: ");

scanf("%f", &r);

area = PI \* r \* r;

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

return 0;

}

/\*

Q2) WAP to enter two numbers and their sum, difference, multiplication, division and modulus and

display the output in the following format

Enter two numbers

50 10

50 + 10 = 60

50 – 10 = 40

50 \* 10 = 500

50 / 10 = 5

50 % 10 = 0

\*/

#include <stdio.h>

int main() {

int a, b;

printf("Enter two numbers: ");

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

printf("%d + %d = %d\n", a, b, a + b);

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

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

if (b != 0) {

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

printf("%d %% %d = %d\n", a, b, a % b);

} else {

printf("Division or modulus by zero not allowed\n");

}

return 0;

}

/\*

Q3) Enter the length and breadth of a rectangle and find the area.

\*/

#include <stdio.h>

int main() {

float l, b, area;

printf("Enter length and breadth: ");

scanf("%f %f", &l, &b);

area = l \* b;

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

return 0;

}

/\*

Q4) Find the average of 3 entered numbers.

\*/

#include <stdio.h>

int main() {

float a, b, c, avg;

printf("Enter three numbers: ");

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

avg = (a + b + c) / 3;

printf("Average = %.2f\n", avg);

return 0;

}

/\*

Q5) Enter the CGPA obtained by a student and find the equivalent percentage of marks.

(Hint : (CGPA - 0.5) × 10)

\*/

#include <stdio.h>

int main() {

float cgpa, percent;

printf("Enter CGPA: ");

scanf("%f", &cgpa);

percent = (cgpa - 0.5) \* 10;

printf("Percentage = %.2f%%\n", percent);

return 0;

}

/\*

Q6) Swap the values of two variables using a third variable.

\*/

#include <stdio.h>

int main() {

int a, b, temp;

printf("Enter two numbers: ");

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

temp = a;

a = b;

b = temp;

printf("After swapping: a=%d, b=%d\n", a, b);

return 0;

}

/\*

Q7) Swap the values of two variables without using a third variable.

\*/

#include <stdio.h>

int main() {

int a, b;

printf("Enter two numbers: ");

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

a = a + b;

b = a - b;

a = a - b;

printf("After swapping: a=%d, b=%d\n", a, b);

return 0;

}

/\*

Q8) Find the sum of the individual digits of any entered three-digit positive number.

\*/

#include <stdio.h>

int main() {

int num, sum = 0;

printf("Enter a three-digit number: ");

scanf("%d", &num);

sum += num % 10;

num /= 10;

sum += num % 10;

num /= 10;

sum += num;

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

return 0;

}

/\*

Q9) Enter the principal, time, and rate of interest. Calculate the simple interest.

\*/

#include <stdio.h>

int main() {

float p, t, r, si;

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

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

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

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

return 0;

}

/\*

Q10) Convert any input temperature in Fahrenheit to Celsius. Hint : C = (F-32)\*5/9

\*/

#include <stdio.h>

int main() {

float f, c;

printf("Enter temperature in Fahrenheit: ");

scanf("%f", &f);

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

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

return 0;

}

/\*

Q11) Convert Celsius to Fahrenheit. (HINT: F = C\*9/5 + 32)

\*/

#include <stdio.h>

int main() {

float c, f;

printf("Enter temperature in Celsius: ");

scanf("%f", &c);

f = c \* 9 / 5 + 32;

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

return 0;

}

/\*

Q12) WAP to enter side of a square and display radius of a circle whose area is same as that of square.

\*/

#include <stdio.h>

#include <math.h>

int main() {

float side, area, radius;

printf("Enter side of square: ");

scanf("%f", &side);

area = side \* side;

radius = sqrt(area / 3.14159);

printf("Radius of circle = %.2f\n", radius);

return 0;

}

/\*

Q13) Find the percentage of marks obtained by a student by entering the marks secured

by the student in 5 subjects. Consider the total mark in each subject is 100.

\*/

#include <stdio.h>

int main() {

int m1, m2, m3, m4, m5;

float percentage;

printf("Enter marks in 5 subjects (out of 100): ");

scanf("%d %d %d %d %d", &m1, &m2, &m3, &m4, &m5);

percentage = (m1 + m2 + m3 + m4 + m5) / 5.0;

printf("Percentage = %.2f%%\n", percentage);

return 0;

}

/\*

Q14) Calculate the gross salary of an employee by entering the basic salary.

DA is 42%, HRA is 30% of the basic salary and a fixed other allowance (OA) of Rs. 2000.

(Gross salary = Basic + DA + HRA + OA)

\*/

#include <stdio.h>

int main() {

float basic, da, hra, gross;

int oa = 2000;

printf("Enter basic salary: ");

scanf("%f", &basic);

da = 0.42 \* basic;

hra = 0.30 \* basic;

gross = basic + da + hra + oa;

printf("Gross Salary = %.2f\n", gross);

return 0;

}

/\*

Q15) Convert an input total number of days into corresponding number of years, months and remaining

days. Consider 1 month=30 days.

(Example- Input days: 450 days; Output: 1 year, 2 months, 25 days)

\*/

#include <stdio.h>

int main() {

int days, years, months, rem;

printf("Enter total days: ");

scanf("%d", &days);

years = days / 365;

days %= 365;

months = days / 30;

rem = days % 30;

printf("%d year(s), %d month(s), %d day(s)\n", years, months, rem);

return 0;

}

/\*

Q16) Input some quantity weight in grams and calculate the corresponding weight in Kilograms and

remaining grams. (Example- Input weight: 1500 grams; Output: 1 KG 500 grams)

\*/

#include <stdio.h>

int main() {

int grams, kg, rem;

printf("Enter weight in grams: ");

scanf("%d", &grams);

kg = grams / 1000;

rem = grams % 1000;

printf("%d KG %d grams\n", kg, rem);

return 0;

}

/\*

Q18) Calculate the distance between two points (x1, y1) and (x2, y2) for any entered values.

\*/

#include <stdio.h>

#include <math.h>

int main() {

float x1, y1, x2, y2, d;

printf("Enter coordinates (x1 y1): ");

scanf("%f %f", &x1, &y1);

printf("Enter coordinates (x2 y2): ");

scanf("%f %f", &x2, &y2);

d = sqrt(pow(x2 - x1, 2) + pow(y2 - y1, 2));

printf("Distance = %.2f\n", d);

return 0;

}

/\*

Q19) Calculate area of a triangle by Herron’s method for any entered values of a, b and c.

Hint: A = √s(s − a)(s − b)(s − c)

\*/

#include <stdio.h>

#include <math.h>

int main() {

float a, b, c, s, area;

printf("Enter three sides of triangle: ");

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

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

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

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

return 0;

}

/\*

Q20) Print the size of various basic data types (char, int, float, double) in C.

\*/

#include <stdio.h>

int main() {

printf("Size of char = %zu byte(s)\n", sizeof(char));

printf("Size of int = %zu byte(s)\n", sizeof(int));

printf("Size of float = %zu byte(s)\n", sizeof(float));

printf("Size of double = %zu byte(s)\n", sizeof(double));

return 0;

}

/\*

Q21) Calculate the total bill to be paid by a customer entering the price of 3 products and their

quantities.

\*/

#include <stdio.h>

int main() {

float p1, p2, p3, total;

int q1, q2, q3;

printf("Enter price and quantity of product 1: ");

scanf("%f %d", &p1, &q1);

printf("Enter price and quantity of product 2: ");

scanf("%f %d", &p2, &q2);

printf("Enter price and quantity of product 3: ");

scanf("%f %d", &p3, &q3);

total = p1\*q1 + p2\*q2 + p3\*q3;

printf("Total Bill = %.2f\n", total);

return 0;

}

/\*

Q22) Find ascii code of an entered character.

\*/

#include <stdio.h>

int main() {

char ch;

printf("Enter a character: ");

scanf(" %c", &ch);

printf("ASCII code of %c = %d\n", ch, ch);

return 0;

}

/\*

Q23) Convert a lower case letter to upper case letter.

\*/

#include <stdio.h>

int main() {

char ch;

printf("Enter a lowercase letter: ");

scanf(" %c", &ch);

if (ch >= 'a' && ch <= 'z')

ch = ch - 32;

printf("Uppercase = %c\n", ch);

return 0;

}

/\*

Q24) Cconvert a lower case letter to upper case letter.

(Note: This is same as Q23, repeating for assignment.)

\*/

#include <stdio.h>

int main() {

char ch;

printf("Enter a lowercase letter: ");

scanf(" %c", &ch);

if (ch >= 'a' && ch <= 'z')

ch = ch - 32;

printf("Uppercase = %c\n", ch);

return 0;

}

/\*

Q25) Find the smallest number among three entered numbers using conditional operator.

\*/

#include <stdio.h>

int main() {

int a, b, c, min;

printf("Enter three numbers: ");

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

min = (a < b) ? ((a < c) ? a : c) : ((b < c) ? b : c);

printf("Smallest = %d\n", min);

return 0;

}

/\*

Q26) Enter the total price of some food order by a customer in a restaurant. The restaurant charges a

12% GST on total amount. If the total amount exceeds RS 1000, the restaurant offers a 5%

discount. Otherwise no discount is provided. Use conditional operator for discount calculation.

Print the final amount payable by the customer.

\*/

#include <stdio.h>

int main() {

float price, final;

printf("Enter total price: ");

scanf("%f", &price);

final = price + (price \* 0.12);

final = (final > 1000) ? (final - (final \* 0.05)) : final;

printf("Final Amount = %.2f\n", final);

return 0;

}

/\*

Q27) Find the volume of a cylinder.

\*/

#include <stdio.h>

#define PI 3.14159

int main() {

float r, h, volume;

printf("Enter radius and height: ");

scanf("%f %f", &r, &h);

volume = PI \* r \* r \* h;

printf("Volume of cylinder = %.2f\n", volume);

return 0;

}

/\*

Q28) WAP to find the volume of a sphere.

\*/

#include <stdio.h>

#define PI 3.14159

int main() {

float r, volume;

printf("Enter radius: ");

scanf("%f", &r);

volume = (4.0/3.0) \* PI \* r \* r \* r;

printf("Volume of sphere = %.2f\n", volume);

return 0;

}

/\*

Q29) WAP to compute roots of a quadratic equation ax^2 + bx + c.

Hint: (-b ± √(b^2-4ac)) / 2a

\*/

#include <stdio.h>

#include <math.h>

int main() {

float a, b, c, d, r1, r2;

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

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

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

if (d < 0) {

printf("No real roots\n");

} else if (d == 0) {

r1 = -b / (2\*a);

printf("One real root: %.2f\n", r1);

} else {

r1 = (-b + sqrt(d)) / (2\*a);

r2 = (-b - sqrt(d)) / (2\*a);

printf("Roots: %.2f and %.2f\n", r1, r2);

}

return 0;

}

/\*

Q30) WAP to enter a three digit number and compute its reverse.

Hint: Enter a number 728 → Reverse = 827

\*/

#include <stdio.h>

int main() {

int num, rev = 0, digit;

printf("Enter a three-digit number: ");

scanf("%d", &num);

while (num > 0) {

digit = num % 10;

rev = rev \* 10 + digit;

num /= 10;

}

printf("Reverse = %d\n", rev);

return 0;

}

/\*

Q31) WAP to enter a four digit number and compute sum of the digit.

Enter a four digit number 7280 → Sum of digits = 17

\*/

#include <stdio.h>

int main() {

int num, sum = 0;

printf("Enter a four-digit number: ");

scanf("%d", &num);

while (num > 0) {

sum += num % 10;

num /= 10;

}

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

return 0;

}

/\*

Q32) Convert degree to radian.

Hint: 180° = π radians

\*/

#include <stdio.h>

#define PI 3.14159

int main() {

float deg, rad;

printf("Enter angle in degrees: ");

scanf("%f", &deg);

rad = deg \* (PI / 180);

printf("Radian = %.4f\n", rad);

return 0;

}

/\*

Q33) Convert radian to degree.

Hint: π radians = 180°

\*/

#include <stdio.h>

#define PI 3.14159

int main() {

float rad, deg;

printf("Enter angle in radians: ");

scanf("%f", &rad);

deg = rad \* (180 / PI);

printf("Degree = %.2f\n", deg);

return 0;

}

/\*

Q34) Enter polar coordinates (r , θ) of a point and convert them into Cartesian coordinates (x,y).

Hint: x = r cos(θ), y = r sin(θ)

\*/

#include <stdio.h>

#include <math.h>

int main() {

float r, theta, x, y;

printf("Enter r and θ (in radians): ");

scanf("%f %f", &r, &theta);

x = r \* cos(theta);

y = r \* sin(theta);

printf("Cartesian Coordinates: (%.2f, %.2f)\n", x, y);

return 0;

}

/\*

Q35) WAP to enter Cartesian coordinates (x,y) of a point and convert them into polar coordinates (r , θ).

Hint: r = √(x^2 + y^2), θ = tan−1(y/x)

\*/

#include <stdio.h>

#include <math.h>

int main() {

float x, y, r, theta;

printf("Enter Cartesian coordinates (x y): ");

scanf("%f %f", &x, &y);

r = sqrt(x\*x + y\*y);

theta = atan2(y, x); // atan2 handles all quadrants

printf("Polar Coordinates: r = %.2f, θ = %.2f radians\n", r, theta);

return 0;

}

/\*

Q36) WAP to enter co-ordinates of two points of a square, then calculate area and perimeter of the square.

Hint:

Enter x1=0, y1=0

Enter x2=3, y2=4

Side = 5 → AREA = 25, PERIMETER = 20

\*/

#include <stdio.h>

#include <math.h>

int main() {

float x1, y1, x2, y2, side, area, peri;

printf("Enter x1 y1: ");

scanf("%f %f", &x1, &y1);

printf("Enter x2 y2: ");

scanf("%f %f", &x2, &y2);

side = sqrt(pow(x2 - x1, 2) + pow(y2 - y1, 2));

area = side \* side;

peri = 4 \* side;

printf("Side = %.2f\n", side);

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

printf("Perimeter = %.2f\n", peri);

return 0;

}