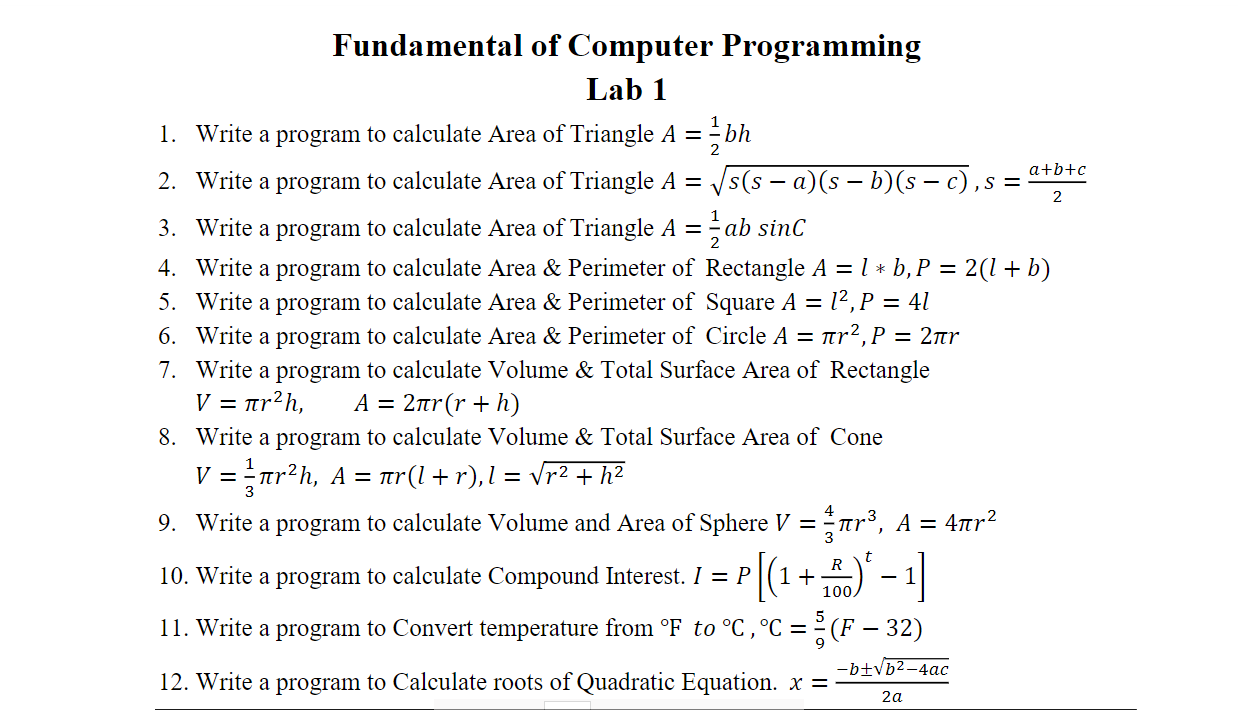


C Programming

Lab 1

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Github link:

<https://github.com/techpradip/cProgramming>

Q1. Write a program to calculate Area of Triangle 𝐴 = 1/ 2 𝑏ℎ

i. Algorithm ii. Flowchart

Step 1: input b & h Start

Step 2: area = 0.5\*b\*h

Step 3: print area Input b,h

area= 0.5\*b\*h

print area

end

iii.Code

/\*

Calculating area of triangle by taking base and height as input.

Formula used Area= 0.5\*b \*h

\*/

#include <stdio.h>

#include<conio.h>

int main ()

{

printf ("A code by techpradip\n");

int b, h;

float area;

printf ("Enter base and height respectively:\n");

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

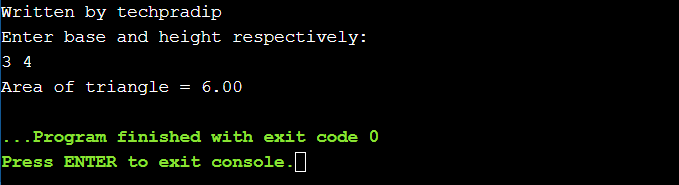
area = 0.5 \* b \* h;

printf ("Area of triangle = %.2f", area);

return 0;

}

iv. Output



Q2 .Write a program to calculate Area of Triangle 𝐴 = √(𝑠 − 𝑎)(𝑠 − 𝑏)(𝑠 − 𝑐) , 𝑠 = 𝑎+𝑏+𝑐

i.Algorithm ii. Flowchart

Step 1: input a,b,c Start

Step 2: s= (a+b+c)\*0.5

Step 3: area = √(𝑠 − 𝑎)(𝑠 − 𝑏)(𝑠 − 𝑐) Input a,b,c

Step 4: print area

s = (a+b+c) )\*0.5

area = √𝑠(𝑠 − 𝑎)(𝑠 − 𝑏)(𝑠 − 𝑐)

print area

End

iii.Code

/\*

C program to calculate area of triangle using perimeter

\*/

#include <stdio.h>

int main()

{

printf ("A code by techpradip\n");

int a,b,c;

float s,d,A;

printf("Enter a b c\n");

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

s=(a+b+c)\*0.5;

d=s\*(s-a)(s-b)(s-c);

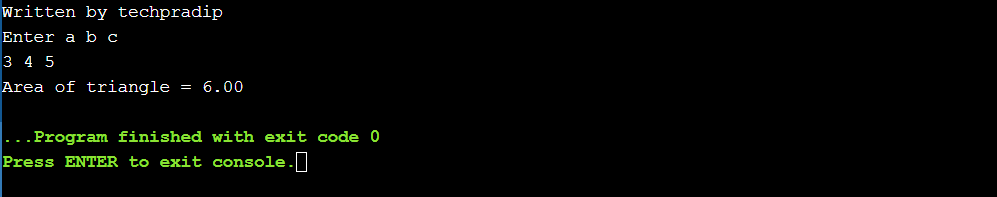
A=sqrt(d);

printf("Area of triangle = %.2f",A);

return 0;

}

iv.Output



Q3. Write a program to calculate Area of Triangle 𝐴 = 1/2\*𝑎𝑏\*𝑠𝑖𝑛𝐶

i.Algorithm ii. Flowchart

Step 1: Input a , b and angle(in degree) Start

Step 2: rad = degree\*0.0174;

Step 3: area = 0.5\*a\*b\*sin(rad) Input a,b and C(angle in degree)

Step 4: print area

rad = C \* 0.0174

area = 0.5 \* a \* b \* sin (rad)

print area

End

Github link:

<https://github.com/techpradip/cProgramming>

iii. Code

/\*

Calculating area of triangle by taking two sides a and b &

remaining angle C

\*/

#include <stdio.h>

#include <math.h>

int

main ()

{

printf ("A code by techpradip\n");

float a, b, C, rad, area;

printf ("Input two sides a,b & angle C in degree\n");

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

// PI/180 = 0.01744444 and radian = degree \* PI/180

rad = C \* 0.0174;

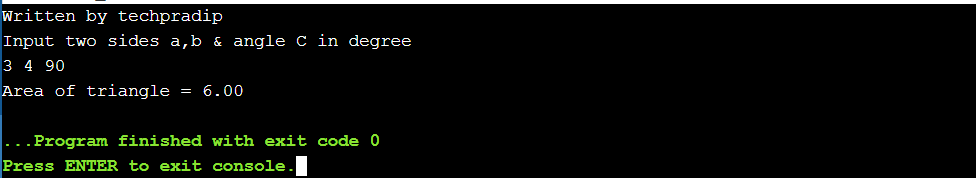
area = 0.5 \* a \* b \* sin (rad);

printf ("Area of triangle = %.2f", area);

return 0;

}

iv.Output



Q4. Write a program to calculate Area & Perimeter of Rectangle 𝐴 = 𝑙 ∗ 𝑏, 𝑃 = 2(𝑙 + 𝑏)

i. Algorithm ii. Flowchart

Step 1: input l,b Start

Step 2: area = l \* b

Step 3: perimeter = 2\*(l+b) Input l,b

Step 4: print area and perimeter

area = l \* b

perimeter = 2\*(l+b)

print area and perimeter

End

iii.Code

/\* C program to calculate area and perimeter of rectangle

\*/

#include<stdio.h>

int main ()

{

printf ("A code by techpradip\n");

float l,b,A,P;

printf ("Enter length(l) and breadth(b): ");

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

A = l \* b;

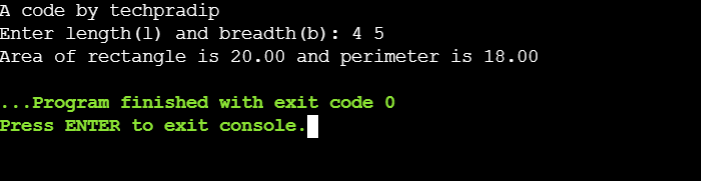
P = 2\*(l+b);

printf ("Area of rectangle is %.2f and perimeter is %.2f",A,P);

return 0;

}

iv. Output



Q5. Write a program to calculate the Area and Perimeter of Square.(A=l\*l , P=4\*l)

i. Algorithm

Step 1: input l

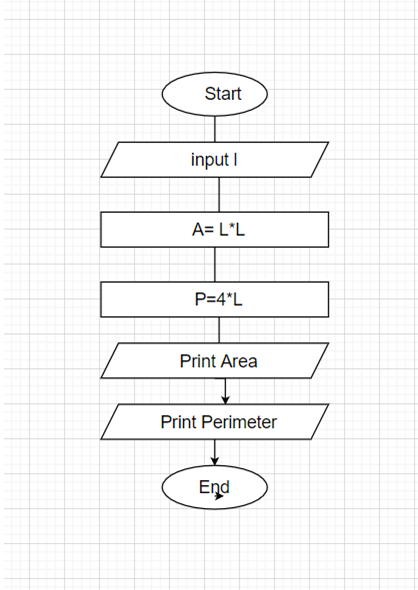
Step 2: A=l\*l

Step 3: P=4\*l

Step 4: Print Area

Step 5: Print Perimeter

ii. Flowchart



iii.Code

/\*

C program to calculate area and perimeter of square

\*/

#include <stdio.h>

#include <math.h>

int main ()

{

printf ("A code by techpradip\n");

float l,A,P;

printf ("Enter length l: ");

scanf("%f",&l);

A = pow (l,2);

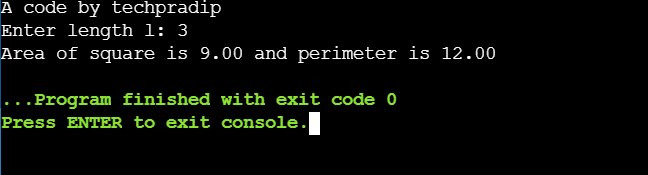
P = 4\*l;

printf ("Area of square is %.2f and perimeter is %.2f",A,P);

return 0;

}

iv. Output



Q6. WAP to calculate area and circumference of circle A = πr2 and C = 2πr.

i. Algorithm

Step 1: input r

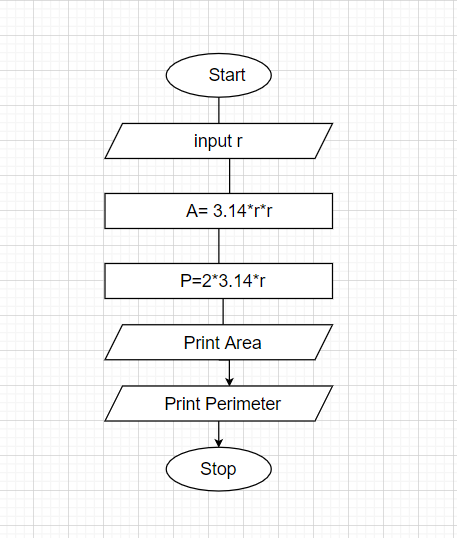
Step 2: A=3.14\*r\*r

Step 3: P=2\*3.14\*r

Step 4: print A

Step 5: print C

ii. Flowchart



iii. Code

/\*C program to calculate area of circle and its circumference with PI defined.

\*/

#include <stdio.h>

#include <math.h>

#define PI 3.14159

int main ()

{

printf ("A code by techpradip\n");

float r, A, rs, c;

printf ("Enter a value of radius: ");

scanf ("%f", &r);

rs = pow (r, 2); // pow() function makes rs as square of r

A = PI \* rs;

c = 2 \* PI \* r;

printf ("Area of circle of radius %.2f is %.2f and circumference is %f", r,A, c);

return 0;

}

Q7. WAP to calculate volume and total surface area of a cylinder.

i. Algorithm

Step 1: input r and h

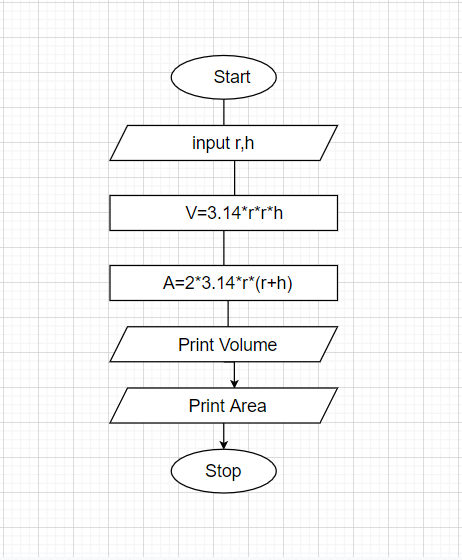
Step 2: V = 3.14\*r\*r\*h

Step 3: A = 2\*3.14\*r\*(r+h)

Step 4: print V

Step 5: print A

ii. Flowchart



iii. Code

/\*

C program to calculate volume and

total surface area of cylinder PI defined.

\*/

#include <stdio.h>

#include <math.h>

#define PI 3.14159

int main ()

{

printf ("A code by techpradip\n");

float r, h, V,TSA ,rs;

printf ("Enter a value of radius and height: ");

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

rs = pow (r, 2); // pow() function makes rs as square of r

V = PI \* rs \*h;

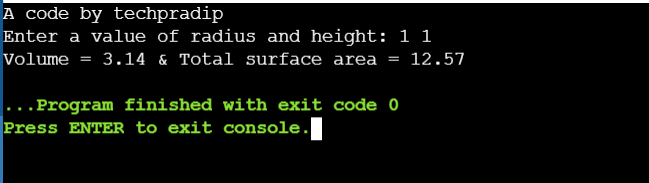
TSA = 2 \* PI \* r \* (r+h);

printf ("Volume = %.2f & Total surface area = %.2f", V, TSA);

return 0;

}

iv. Output



Q8. Write a program to calculate the Volume and Total surface area of a cone.

i. Algorithm

Step 1: input r,h

Step 2: L=sqrt\*(r\*r+h\*h)

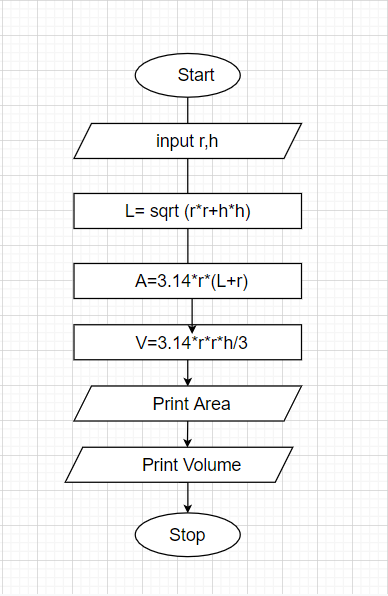
Step 3: A=3.14\*r\*(r\*r+h\*h)

Step 4: V=3.14\*r\*r\*h/3

Step 5: print A

Step 6: print V

ii. Flowchart



iii. Code

/\*

C program to calculate volume and

total surface area of cone PI defined.

\*/

#include <stdio.h>

#include <math.h>

#define PI 3.14159

int main ()

{

printf ("A code by techpradip\n");

float r, h, V, TSA, l;

printf ("Enter a value of radius and height: ");

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

l = sqrt (r\*r + h\*h); // sqrt() function makes l as root of sum of square of r and h

TSA = PI \* r \* (r+l);

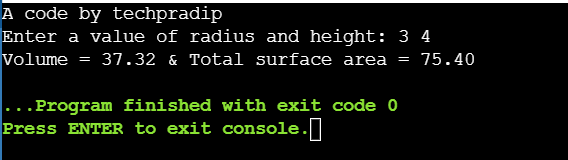
V = 0.33\*PI \* r\*r \*h;

printf ("Volume = %.2f & Total surface area = %.2f", V, TSA);

return 0;

}

iv. Output



Q9. Write a program to calculate the Volume and Total Surface Area of a sphere.

i. Algorithm

Step 1: input r

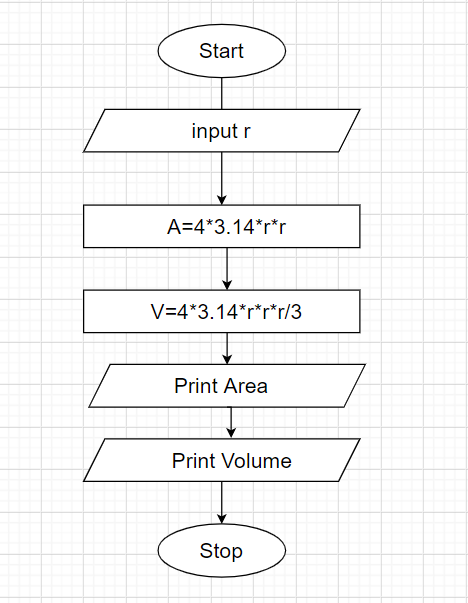
Step 2: A=4\*3.14\*r\*r

Step 3: V=4\*3.14\*r\*r\*r/3

Step 4: print total surface area

Step 5: print Volume

ii. Flowchart



iii. Code

/\* C program to calculate TSA and Volume of sphere\*/

#include <stdio.h>

#include <math.h>

#define PI 3.1415

int main()

{

printf ("A code by techpradip\n");

float r, TSA, V;

printf("Enter radius: ");

scanf("%f",&r);

TSA = 4\* PI \* r\*r; // Formula to calculate total surcace area

V = (4.0/3)\* PI \* pow(r,3);

/\* 4.0/3 to avoid int divide by int

pow(r,3) to get cube of radius

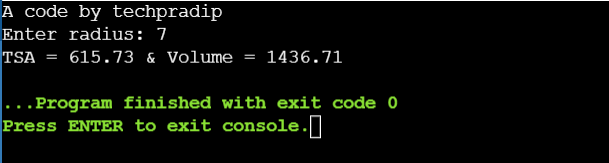
\*/

printf("TSA = %.2f & Volume = %.2f",TSA, V);

return 0;

}

iv. Output



10. Write a program to calculate the compound interest.

i.Algorithm

Step I: input principal, rate and time

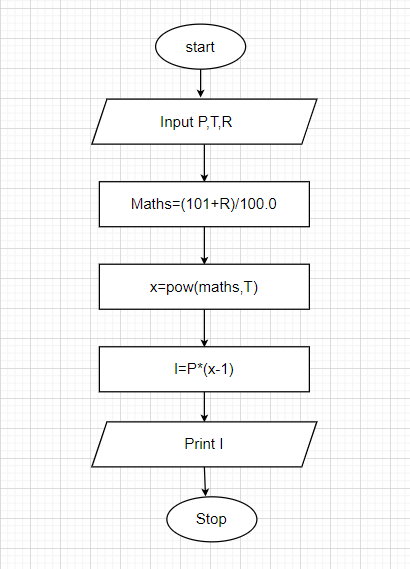
Step II: maths = (1+R/100.0)

Step III: x = pow (maths,t)

Step III: I = P \* (x-1)

Step IV : print compound interest I

ii. Flowchart



iii. Code

/\* C program to calculate compound interest.\*/

#include <stdio.h>

#include <math.h>

int main()

{

printf ("A code by techpradip\n");

float P, t, R, maths, x, I;

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

scanf("%f%f%f",&P, &t, &R);

maths = (1+R/100.0);

x= pow(maths,t);

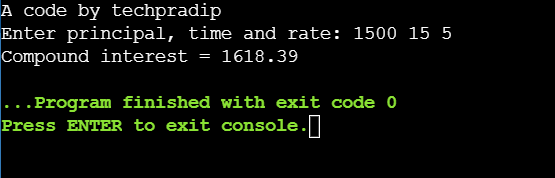
I = P \* (x-1);

printf("Compound interest = %.2f",I);

return 0;

}

iv. Ouput



11. Write a program to convert Temperature from F° to C°, C°=5(F-32)/9.

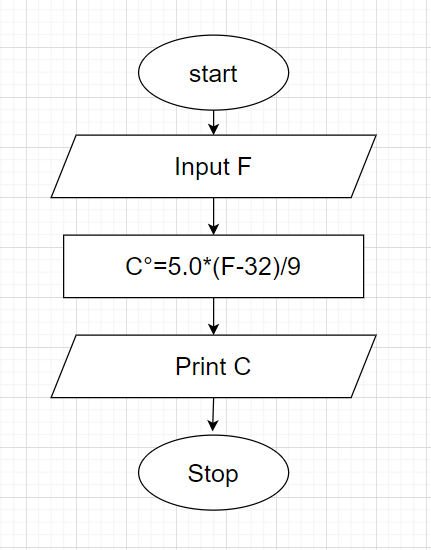
i.Algorithm

Step I: input F

Step II: C = 5\*(F-32)/9

Step III: print C

ii. Flowchart



iii. Code

/\* C program to convert form F to C temp.\*/

#include <stdio.h>

int main()

{

printf ("A code by techpradip\n");

float F, C;

printf("Enter temp in Farenheit: ");

scanf("%f",&F);

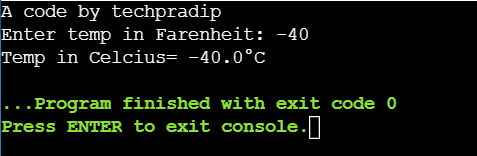
C = 5/9.0\*(F-32);

printf("Temp in Celcius= %.1f°C",C);

return 0;

}

iv. Output



12. Write a program to calculate Roots of Quadratic Equation.

i.Algorithm

Step I: input a ,b,c;

Step II: calculate value of b2-4ac

Step III: find discriminant as d = sqrt(d)

Step IV: x1 = (-b+d)/(2.0\*a)

Step V: x2 = (-b-d)/(2.0\*a)

Step VI: print x1 and x2 roots

ii. Flowchart

Start

input a, b ,c

disc = b2 – 4ac

d = sqrt(disc)

x1 = (-b+d)/(2.0\*a)

x2 = (-b-d)/(2.0\*a)

print x1 and x2

End

iii. Code

/\* C program to calculate roots of quadratic equation.\*/

#include <stdio.h>

#include <math.h>

int main()

{

printf ("A code by techpradip\n");

int a,b,c;

float disc, d, x1, x2;

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

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

disc = (b\*b-4\*a\*c);

d = sqrt(disc);

if (disc>=0)

{

x1 = (-b+d)/(2.0\*a);

x2 = (-b-d)/(2.0\*a);

printf("Roots are\nx1= %.2f & x2= %.2f",x1,x2);

}

else

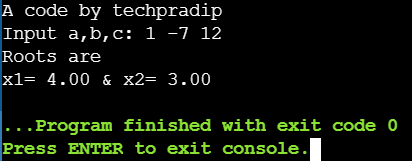
printf("Roots are imaginary");

return 0;

}

iv. Output

For real roots



For imaginary roots

