**ASSIGNMENT – 2: Console I/O and Conditional Statements**

1. Write a C program that reads two values from the keyboard, swaps their values and prints out the result**.**

Code:

#include <stdio.h>

int main()

{

int a,b,c ;

printf("Enter two numbers");

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

c=a+b ;

a=c-a;

b=c-b;

printf("The swapped numbers are : %d and %d\n",a,b);

return 0;

}

Output:

Enter two numbers4 5

The swapped numbers are : 5 and 4

1. If a three-digit integer is input through the keyboard, write a program to calculate the sum of its digits. (Hint: Use the modulo operator '%')

Code:

#include <stdio.h>

int main()

{

int sum, n , temp , i;

sum = 0;

printf("Enter a number: ");

scanf("%d",&n);

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

{

temp = n%10 ;

n = n/10 ;

sum = sum + temp ;

}

printf("The sum of digits is %d\n",sum);

return 0;

}

Output:

Enter a number: 45

The sum of digits is 9

1. Input two integer numbers and divide the larger number by the smaller one. Then display the result using printf() function as a fractional number first and then as a real valued number. (Example: 9 divided by 5 shall yield " 1 4/5" and "1.8" respectively. )

Code:

#include <stdio.h>

int main()

{

int a,b,c,d,e ;

float f;

printf("Enter two numbers");

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

if ( a > b )

{

c = a+b ;

a= c-a;

b= c-b;

}

f=b/(a\*1.0) ;

d= b/a ;

e= b%a ;

printf ("%d divided by %d shall yeild %d + %d/%d and %f\n",b,a,d,e,a,f);

return 0;

}

Output:

Enter two numbers5 9

9 divided by 5 shall yeild 1 + 4/5 and 1.800000

1. Write a C program which accepts basic salary as input and prints the gross salary, which is the sum of the basic, dearness allowance (60% of basic salary), and house rent allowance (15% of basic salary).

Code:

#include <stdio.h>

int main()

{

float a,b ;

printf ("Enter your base salary :");

scanf ( "%f", &a);

b = a + 0.6 \* a + 0.15 \* a ;

printf("Gross salary is: %f\n",b) ;

return 0;

}

Output:

Enter your base salary :10000

Gross salary is: 17500.000000

1. Any year is input through the keyboard. Write a program to determine whether the year is a leap year or not. (Hint: Use the % (modulus) operator)

Code:

#include <stdio.h>

int main()

{

int a;

printf("Enter a year:");

scanf("%d",&a);

if (a%4 ==0)

{

printf ("Leap year !\n");

}

else

{

printf ("Not a leap year\n");

}

return 0;

}

Output:

Enter a year:2023

Not a leap year

Enter a year:2024

Leap year !

1. Write a program to check whether a triangle is valid or not, when (i) the three angles of the triangle are entered through the Keyboard (ii) three sides of the triangle are entered through the keyboard.

Code:

#include <stdio.h>

int main()

{

float a,b,c,x,y,z;

int s;

printf("Do you want to enter side(0) or angles(1) ?");

scanf("%d",&s);

if (s==0)

{

printf ("Enter the 3 sides");

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

if (a+b > c & b+c > a & a+c > b)

{ printf("Triangle is possible"); }

else { printf ("Triangle is not possible"); }

}

else

{

printf("Enter the 3 angles");

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

if (x+y+z ==180)

{ printf ("Triangle is possible");}

else { printf ("Triangle is not possible"); }

}

return 0;

}

Output:

Do you want to enter side(0) or angles(1) ?0

Enter the 3 sides2 3 5

Triangle is not possible

Do you want to enter side(0) or angles(1) ?1

Enter the 3 angles10 20 30

Triangle is not possible

Do you want to enter side(0) or angles(1) ?0

Enter the 3 sides3 4 5

Triangle is possible

Do you want to enter side(0) or angles(1) ?1

Enter the 3 angles60 60 60

Triangle is possible

1. Given three points (x 1, y1), (x2, y2) and (x3, y3), write a program to check if all the three points fall on one straight line.

Code:

#include <stdio.h>

int main()

{

int a,b,x,y,p,q,slope1,slope2,slope3;

printf("Enter point 1:");

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

printf("Enter point 2:");

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

printf("Enter point 3:");

scanf ("%d %d",&p,&q);

slope1= (y-b)/(x-a);

slope2= (q-y)/(p-x);

slope3= (q-b)/(p-a);

if (slope1==slope2 & slope2==slope3 & slope1==slope3)

{

printf("The points fall on a straight line");

}

else

{

printf("The points are not on a straight line\n");

}

return 0;

}

Output:

Enter point 1:1 1

Enter point 2:2 2

Enter point 3:3 3

The points fall on a straight line

1. Given the coordinates (x, y) of a centre of a circle and its radius, write a program which will determine whether a point lies inside the circle, on the circle or outside the circle. (Hint: #include <math.h>. Use sqrt( and pow( ) functions)

Code:

#include <stdio.h>

#include <math.h>

int main()

{

int h,k,r,x,y;

printf("Enter the coordinates of center of circle:");

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

printf("Enter radius of the circle:");

scanf("%d",&r);

printf("Enter the coordinates of a point:");

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

if (sqrt(pow((x-h),2)+pow((y-k),2)) < r)

{

printf("Point is inside the circle\n");

}

else if (sqrt(pow((x-h),2)+pow((y-k),2)) == r)

{

printf("Point is on the circle\n");

}

else

{

printf("Point is outside the circle\n");

}

return 0;

}

Output:

Enter the coordinates of centre of circle:0 0

Enter radius of the circle:5

Enter the coordinates of a point:3 4

Point is on the circle

1. Any character is entered through the keyboard, write a program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol.

Code:

#include <stdio.h>

int main()

{

char x;

printf("Enter a charecter:");

scanf("%c",&x);

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

{

printf("This is a small case letter\n");

}

else if (x>='A' & x<='Z')

{

printf("This is a capital letter\n");

}

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

{

printf("This is a digit\n");

}

else

{

printf("This is a special symbol\n");

}

return 0;

}

Output:

Enter a charecter:$

This is a special symbol

1. Given as input an integer number of seconds, write a program to print as output the equivalent time in hours, minutes and seconds. Recommended output format is something like 7322 seconds is equivalent to 2 hours 2 minutes 2 seconds.

Code:

#include <stdio.h>

int main()

{

int a,b,c,s;

printf("Enter time in seconds:");

scanf("%d",&s);

a=s/3600;

s=s-a\*3600;

b=s/60;

s=s-b\*60;

c=s;

printf("%d hours %d minutes %d seconds\n",a,b,c);

return 0;

}

Output:

Enter time in seconds:7323

2 hours 2 minutes 3 seconds