**KPIT TECHNOLOGIES WEEKLY REPORT**

**LET US C WEEK 1 SOLVED PROBLEMS**

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1. Calculate Simple Interest for a set of values representing principal, number of years and rate of interest.

#include<stdio.h>

int main(){

int p,n;

float r,si;

printf(“Enter the values of p,n,r);

scanf(“%d%d%.2f”,&p,&n,&r);

si=p\*n\*r/100;

printf(“%f\n”,si);

return 0;

}

1. Ramesh’s basic salary is input through the keyboard. His dearness allowance is 40% of basic salary, and house rent allowance is 20% of basic salary. Write a program to calculate his gross salary.

#include<stdio.h>

int main(){

float bp,da,hra,grpay;

printf(“Enter the basic salary”);

scanf(“%f”,&bp);

da=0.4\*bp;

hra=0.2\*bp;

grpay=bp+da+hra;

printf(“Gross salary = %f”,grpay);

return 0;

}

1. The distance between two cities (in kilometers) is input through the keyboard. Write a program to convert and print this distance in meters, feet, inches and centimeters.

# include<stdio.h>

int main( ) {

float km, m, cm, ft, inch;

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

scanf ("%f", &km);

m = km \* 1000;

cm = m \* 100;

inch = cm / 2.54;

ft = inch / 12;

printf ("Distance in meters = %f\n", m);

printf ("Distance in centimeter = %f\n", cm);

printf ("Distance in feet = %f\n", ft);

printf ("Distance in inches = %f\n", inch);

return 0;

}

1. If the marks obtained by a student in five different subjects are input through the keyboard, write a program to find out the aggregate marks and percentage marks obtained by the student. Assume that the maximum marks that can be obtained by a student in each subject is 100.

#include<stdio.h>

int main(){

int m1,m2,m3,m4,m5;aggregate;

float per;

printf(“Enter marks”);

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

aggregate=m1+m2+m3+m4+m5;

per=aggregate/5;

printf(“Aggregate marks: %d”,aggregate);

printf(“Percentage:%f”,per);

return 0;

}

1. Temperature of a city in Fahrenheit degrees is input through the keyboard. Write a program to convert this temperature into Centigrade degrees.

#include<stdio.h>

Int main(){

float f,c;

printf(“Fahrenheit:”);

scanf(“%f”,&f);

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

printf(“%f”,c);

return 0;

}

1. The length and breadth of a rectangle and radius of a circle are input through the keyboard. Write a program to calculate the area and perimeter of the rectangle, and the area and circumference of the circle.

#include<stdio.h>

int main(){

float l,b,r,a1,a2,p,c;

printf(“Enter the values”);

scanf(“%f%f%f”,&l,&b,&r);

a1=l\*b;

a2=3.14\*r\*r;

p=2\*(l+b);

c=2\*3.14\*r;

printf(“Area of Rectangle:%f”,a1);

printf(“Area of circle:%f”,a2);

printf(“Perimeter of Rectangle:%f”,p);

printf(“Circumference of circle:%f”,c);

return 0;

}

1. Paper of size A0 has dimensions 1189 mm x 841 mm. Each subsequent size A(n) is defined as A(n-1) cut in half, parallel to its shorter sides. Thus, paper of size A1 would have dimensions 841 mm x 594 mm. Write a program to calculate and print paper sizes A0, A1, A2, … A8.

#include<stdio.h>

int main(){

int n;

int h=841, int w=1189;

printf("Paper Size A0: %dmm x %dmm\n", width, height);

for (n = 1; n <= 8; n++) {

int newWidth = height;

int newHeight = width / 2;

width = newWidth;

height = newHeight;

printf("Paper Size A%d: %dmm x %dmm\n", n, width, height);

}

return 0;

}

1. If lengths of three sides of a triangle are input through the keyboard, write a program to find the area of the triangle.

#include<stdio.h>

#include<math.h>

int main(){

float a,b,c,sp,area;

printf(“Enter the sides”);

scanf(“%f%f%f”,&a,&b,&c);

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

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

printf(“Area of triangle:%f”,area);

return 0;

}

1. If a five-digit number is input through the keyboard, write a program to reverse the number.

# include <stdio.h>

int main( )

{

int n, d5, d4, d3, d2, d1 ;

long int revnum ;

printf ("Enter a five digit number:");

scanf ("%d", &n);

d5 = n % 10;

n = n / 10;

d4 = n % 10;

n = n / 10;

d3 = n % 10;

n = n / 10;

d2 = n % 10;

n = n / 10;

d1 = n % 10;

revnum = d5 \* 10000 + d4 \* 1000 + d3 \* 100 + d2 \* 10 + d1;

printf ("The reversed number is %ld", revnum );

return 0;

}

1. Consider a currency system in which there are notes of six denominations, namely, Re. 1, Rs. 2, Rs. 5, Rs. 10, Rs. 50, Rs. 100. If a sum of Rs. N is entered through the keyboard, write a program to compute the smallest number of notes that will combine to give Rs. N.

#include <stdio.h>

int main( )

{

int amount, nohun, nofifty, noten, nofive, notwo, noone, total;

printf ("Enter the amount: ");

scanf ("%d", &amount);

nohun = amount / 100;

amount = amount % 100;

nofifty = amount / 50;

amount = amount % 50;

noten = amount / 10;

amount = amount % 10;

nofive = amount / 5;

amount = amount % 5;

notwo = amount / 2;

amount = amount % 2;

noone = amount / 1;

amount = amount % 1;

total = nohun + nofifty + noten + nofive + notwo + noone;

printf ("Smallest number of notes = %d\n", total);

return 0;

}

1. If a five-digit number is input through the keyboard, write a program to calculate sum of its digits.

#include<stdio.h>

int main()

{

int n,s=0;

printf("Enter number\n");

scanf("%d",&n);

while(n!=0)

{

s+=n%10;

n/=10;

}

printf("Sum of digits is %d",s);

return 0;

}

1. Write a program to receive cartesian co-ordinates(x,y) of a point and convert them into polar co-ordinates.

#include<stdio.h>

#include<math.h>

int main()

{

printf("Enter x and y coordinates \n");

float x,y;

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

printf("Polar coordinates are (%f,%f).\n",sqrt(pow(x,2.0)+pow(y,2.0)),atan(y/x));

return 0;

}

1. Write a program to receive values of latitude (L1, L2) and longitude (G1, G2), in degrees, of two places on the earth and output the distance (D) between them in nautical miles. The formula for distance in nautical miles is: D = 3963 cos¹ (sin L1 sin L2 + cos L1 cos L2 \* cos (G2-G1))

#include<stdio.h>

#include<conio.h>

#include<math.h>

int main()

{

float l1,l2,g1,g2, D;

printf("\nEnter (two) the values of lattitude : ");

scanf("%f%f", &l1, &l2);

printf("\nEnter (two) the values of longitude : ");

scanf("%f%f", &g1, &g2);

D = 3963\*acos(sin(l1)\*sin(l2) + cos(l1)\*cos(l2)\*cos(g2-g1));

printf("\nDistance : %f", D);

getch();

return 0;

}

1. Wind-chill factor is the felt air temperature on exposed skin due to wind. The wind-chill temperature is always lower than the air temperature, and is calculated as per the following formula: wcf = 35.74 +0.6215t + (0.4275t - 35.75) \* v0.16 where t is temperature and v is wind velocity. Write a program to receive values of t and v and calculate wind-chill factor (wcf).

a#include<math.h>

#include<stdio.h>

int main()

{

printf("Enter temperature and velocity of wind\n");

float t,v,wcf=0;

scanf("%f %f",&t,&v);

wcf=35.74+0.6215\*t+(0.4275\*t-35.75)\*pow(v,0.16);

printf("Wind Chill factor of Temperature %f and Velocity %f is %f",t,v,wcf);

return 0;

}

1. If value of an angle is input through the keyboard, write a program to print all its Trigonometric ratios.

#include<stdio.h>

#include<math.h>

int main()

{

float a;

printf("Enter the value of angle\n");

scanf("%f",&a);

printf("The sine = %f.\n",sin(a));

printf("The cosine = %f.\n",cos(a));

printf("The tangent = %f.\n",tan(a));

printf("The cotangent = %f.\n",(1/tan(a)));

printf("The cosecant = %f.\n",(1/sin(a)));

printf("The secant = %f.\n",(1/cos(a)));

return 0;

}

1. Two numbers are input through the keyboard into two locations C and D. Write a program to interchange the contents of C and D.

#include<stdio.h>

int main()

{

printf("Enter two numbers\n");

int c,d;

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

printf("Before Interchange C=%d and D=%d.\n",c,d);

c=c+d;

d=c-d;

c=c-d;

printf("After Interchange C=%d and D=%d.\n",c,d);

return 0;

}

1. While purchasing certain items, a discount of 10% is offered if the quantity purchased is more than 1000. If quantity and price per item are input through the keyboard, write a program to calculate the total expenses.

# include <stdio.h>

int main( )

{

int qty, dis ;

float rate, tot ;

printf ( "Enter quantity and rate " ) ;

scanf ( "%d %f", &qty, &rate) ;

if ( qty > 1000 )

dis = 10 ;

else

dis = 0 ;

tot = ( qty \* rate ) - ( qty \* rate \* dis / 100 ) ;

printf ( "Total expenses = Rs. %f\n", tot ) ;

return 0 ;

}

1. In a company an employee is paid as under: If his basic salary is less than Rs. 1500, then HRA = 10% of basic salary and DA = 90% of basic salary. If his salary is either equal to or above Rs. 1500, then HRA = Rs. 500 and DA = 98% of basic salary. If the employee's salary is input through the keyboard write a program to find his gross salary.

# include <stdio.h>

int main( )

{

float bs, gs, da, hra ;

printf ( "Enter basic salary " ) ;

scanf ( "%f", &bs ) ;

if ( bs < 1500 )

{

hra = bs \* 10 / 100 ;

da = bs \* 90 / 100 ;

}

else

{

hra = 500 ;

da = bs \* 98 / 100 ;

}

gs = bs + hra + da ;

printf ( "gross salary = Rs. %f\n", gs ) ;

return 0 ;

}

1. If cost price and selling price of an item is input through the keyboard, write a program to determine whether the seller has made profit or incurred loss. Also determine how much profit he made or loss he incurred.

# include <stdio.h>

int main( )

{

float cp, sp, p, l ;

printf ( "\nEnter cost price and selling price: " ) ;

scanf ( "%f %f", &cp, &sp ) ;

p = sp - cp ;

l = cp - sp ;

if ( p > 0 )

printf ( "The seller made a profit of Rs. %f\n", p ) ;

if ( l > 0 )

printf ( "The seller incurred loss of Rs. %f\n", l ) ;

if ( p == 0 )

printf ( "There is no loss, no profit\n" ) ;

return 0 ;

}

1. Any integer is input through the keyboard. Write a program to find out whether it is an odd number or even number.

# include <stdio.h>

int main( )

{

int n ;

printf ( "\nEnter any number: " ) ;

scanf ( "%d", &n ) ;

if ( n % 2 == 0 )

printf ( "The number is even\n" ) ;

else

printf ( "The number is odd\n" ) ;

return 0 ;

}

1. Any year is input through the keyboard. Write a program to determine whether the year is a leap year or not.

# include <stdio.h>

int main( )

{

int yr ;

printf ( "\nEnter a year: " ) ;

scanf ( "%d", &yr ) ;

if ( yr % 100 == 0 )

{

if ( yr % 400 == 0 )

printf ( "Leap year\n" ) ;

else

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

}

else

{

if ( yr % 4 == 0 )

printf ( "Leap year\n" ) ;

else

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

}

return 0 ;

}

1. A five-digit number is entered through the keyboard. Write a program to obtain the reversed number and to determine whether the original and reversed numbers are equal or not.

#include<stdio.h>

#include<conio.h>

int main()

{

int num,a,b,c,d,e,x;

printf("Enter a five digit number : ");

scanf("%d", &num);

e = num % 10;

d = (num/10) % 10;

c = (num/100) % 10;

b = (num/1000) % 10;

a = (num/10000);

x = e\*10000 + d\*1000 + c\*100 + b\*10 + a;

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

if(x == num)

printf("\n\nThe reverse of the number %d is same as actual number.", num);

getch();

return 0;

}

1. If ages of Ram, Shyam and Ajay are input through the keyboard, write a program to determine the youngest of the three.

#include<stdio.h>

#include<conio.h>

int main()

{

int r,s,a;

printf("Enter the age of Ram, Shyam and Ajay respectively : ");

scanf("%d%d%d", &r,&s,&a);

if(r<s && r<a)

printf("\n\nRam is youngest among all.");

else if(s<r && s<a)

printf("\n\nShyam is youngest among all.");

else

printf("\n\nAjay is youngest among all.");

getch();

return 0;

}

1. Write a program to check whether a triangle is valid or not, if three angles of the triangle are entered through the keyboard. A triangle is valid if the sum of all the three angles is equal to 180 degrees.

#include<stdio.h>

int main()

{

int a1,a2,a3;

printf("Enter the angles of Triangle in any order in Degrees.\n");

scanf("%d %d %d",&a1,&a2,&a3);

if(a1+a2+a3==180)

{

printf("Triangle is Valid.");

}

else

{

printf("Triangle is Invalid.");

}

return 0;

}

1. Write a program to find the absolute value of a number entered through the keyboard.

#include<math.h>

#include<stdio.h>

int main()

{

int n;

printf("Enter number\n");

scanf("%d",&n);

printf("Absolute value of %d is %d.",n,abs(n));

return 0;

}

1. Given the length and breadth of a rectangle, write a program to find whether the area of the rectangle is greater than its perimeter. For example, the area of the rectangle with length = 5 and breadth = 4 is greater than its perimeter.

#include <stdio.h>

int main()

{

int l,b;

printf("Enter length and breadth of rectangle\n");

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

if((l\*b)>(2\*(l+b)))

{

printf("Area is Greater than perimeter\n");

}

else

{

printf("Area is not Greater than perimeter\n");

}

return 0;

}

1. Given three points (x1, y1), (x2, y2) and (x3, y3), write a program to check if the three points fall on one straight line.

#include <stdio.h>

int main()

{

float x1,y1,x2,y2,x3,y3;

printf("Enter coordinates (x1,y1)\n");

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

printf("Enter coordinates (x2,y2)\n");

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

printf("Enter coordinates (x3,y3)\n");

scanf("%f %f",&x3,&y3);

if((y2-y1)/(x2-x1)==(y3-y1)/(x3-x1))

{

printf("Point lies on straight line");

}

else

{

printf("Points don't lie on straight line");

}

return 0;

}

1. Given the coordinates (x, y) of center of a circle and its radius, write a program that will determine whether a point lies inside the circle, on the circle or outside the circle.

#include<stdio.h>

#include<conio.h>

int main()

{

float r,x,y;

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

scanf("%f", &r);

printf("\n\nEnter the x-y coordinates of the point for checking it's position : ");

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

if(r > sqrt(pow(x,2) + pow(y,2)))

printf("\n\nThe pints lie inside the circle.");

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

printf("\n\nThe points lie on the circle.");

else

printf("\n\nThe points lie outside the circle.");

getch();

return 0;

}

1. Given a point (x, y), write a program to find out if it lies on X-axis, Yaxis or origin.

#include<stdio.h>

int main()

{

float x,y;

printf("Enter Coordinates\n");

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

if(x==0.0&&y==0.0)

printf("Point lies on origin\n");

else if (x==0.0&&y>0.0)

printf("Point lies on y-axis\n");

else if(y==0.0&& x>0.0)

printf("Point lies on x-axis\n");

return 0;

}

1. According to Gregorian calendar, it was Monday on the date 01/01/01. If any year is input through the keyboard write a program to find out what is the day on 1st January of this year.

#include<stdio.h>

#include<conio.h>

int main()

{

int year, basic\_year=1900, leap\_year, remaining\_year, total\_days, day;

printf("Enter the year: ");

scanf("%d", &year);

year = (year-1)-basic\_year;

leap\_year = year/4;

remaining\_year = year - leap\_year;

total\_days = (remaining\_year\*365) + (leap\_year\*366) + 1;

day = total\_days%7;

if(day==0)

printf("Monday");

else if(day==1)

printf("Tuesday");

else if(day==2)

printf("Wednesday");

else if(day==3)

printf("Thursday");

else if(day==4)

printf("Friday");

else if(day==5)

printf("Saturday");

else if(day==6)

printf("Sunday");

else

printf("Wrong Entry");

return 0;

}

1. The marks obtained by a student in 5 different subjects are input through the keyboard. The student gets a division as per the following rules: Percentage above or equal to 60 - First division Percentage between 50 and 59 - Second division Percentage between 40 and 49 - Third division Percentage less than 40 - Fail Write a program to calculate the division obtained by the student.

# include <stdio.h>

int main( )

{

int m1, m2, m3, m4, m5, per ;

printf ( "Enter marks in five subjects " ) ;

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

per = ( m1 + m2 + m3 + m4 + m5 ) \* 100 / 500 ;

if ( per >= 60 )

printf ( "First division\n" ) ;

else

{

if ( per >= 50 )

printf ( "Second division\n" ) ;

else

{

if ( per >= 40 )

printf ( "Third division\n" ) ;

else

printf ( "Fail\n" ) ;

}

}

return 0 ;

}

1. A company insures its drivers in the following cases:

* If the driver is married.
* If the driver is unmarried, male & above 30 years of age.
* If the driver is unmarried, female & above 25 years of age.

In all other cases, the driver is not insured. If the marital status, sex and age of the driver are the inputs, write a program to determine whether the driver should be insured or not. The final outcome of the program would be—either the driver should be insured or the driver should not be insured. So, the program can be conveniently written using logical operators. For this let us first identify those cases in which the driver is insured. They are—Driver is married, Driver is an unmarried male above 30 years of age, and Driver is an unmarried female above 25 years of age. Since all these cases lead to the driver being insured, they can be combined together using && and || as shown in the program below.

# include <stdio.h>

int main( )

{

char sex, ms ;

int age ;

printf ( "Enter age, sex, marital status " ) ;

scanf ( "%d %c %c", &age, &sex, &ms ) ;

if ( ( ms == 'M') || ( ms == 'U' && sex == 'M' && age > 30 ) ||

( ms == 'U' && sex == 'F' && age > 25 ) )

printf ( "Driver should be insured\n" ) ;

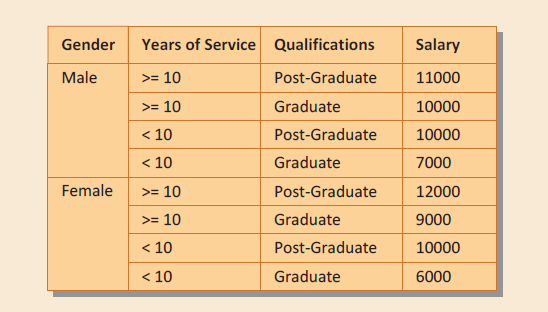
else

printf ( "Driver should not be insured\n" ) ;

return 0 ;

}

1. Write a program to calculate the salary as per the following table:



# include <stdio.h>

int main( )

{

char g ;

int yos, qual, sal = 0 ;

printf ( "Enter Gender, Years of Service and

Qualifications (0 = G, 1 = PG): " ) ;

scanf ( "%c%d%d", &g, &yos, &qual ) ;

if ( g == 'm' && yos >= 10 && qual == 1 )

sal = 11000 ;

else if ( ( g == 'm' && yos >= 10 && qual == 0 ) ||

( g == 'm' && yos < 10 && qual == 1 ) )

sal = 10000 ;

else if ( g == 'm' && yos < 10 && qual == 0 )

sal = 7000 ;

else if ( g == 'f' && yos >= 10 && qual == 1 )

sal = 12000 ;

else if ( g == 'f' && yos >= 10 && qual == 0 )

sal = 9000 ;

else if ( g == 'f' && yos < 10 && qual == 1 )

sal = 10000 ;

else if ( g == 'f' && yos < 10 && qual == 0 )

sal = 6000 ;

printf ( "\nSalary of Employee = %d\n", sal ) ;

return 0 ;

}

1. A year is entered through the keyboard, write a program to determine whether the year is leap or not. Use the logical operators && and ||.

#include<stdio.h>

int main(){

int year;

printf(“Enter year:”);

scanf(“%d”,&year);

if(yeae%400==0 || year%100!=0 && year%4==0)

printf(“Leap year”);

else

printf(“Not a leap year”);

return 0;

}

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

# include <stdio.h>

int main( )

{

char ch ;

printf ( "\nEnter a character from the keyboard: " ) ;

scanf ( "%c", &ch ) ;

if ( ch >= 65 && ch <= 90 )

printf ( "The character is an uppercase letter\n" ) ;

if ( ch >= 97 && ch <= 122 )

printf ( "The character is a lowercase letter\n" ) ;

if ( ch >= 48 && ch <= 57 )

printf ( "The character is a digit\n" ) ;

if ( ( ch >= 0 && ch < 48 ) || ( ch > 57 && ch < 65 )

|| ( ch > 90 && ch < 97 ) || ch > 122 )

printf ( "The character is a special symbol\n" ) ;

return 0 ;

}

1. If the lengths of three sides of a triangle are entered through the keyboard, write a program to check whether the triangle is valid or not. The triangle is valid if the sum of two sides is greater than the largest of the three sides.

# include <stdio.h>

int main( )

{

int side1, side2, side3, largeside, sum ;

printf ( "\nEnter three sides of the triangle: " ) ;

scanf ( "%d %d %d", &side1, &side2, &side3 ) ;

if ( side1 > side2 )

{

if ( side1 > side3 )

{

sum = side2 + side3 ; largeside = side1 ;

}

else

{

sum = side1 + side2 ; largeside = side3 ;

}

}

else

{

if ( side2 > side3 )

{

sum = side1 + side3 ; largeside = side2 ;

}

else

{

sum = side1 + side2 ; largeside = side3 ;

}

}

if ( sum > largeside )

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

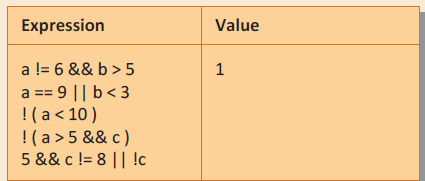
else

printf ( "The triangle is an invalid triangle\n" ) ;

return 0 ;

}

1. If a = 10, b = 12, c = 0, find the values of the expressions in the following table:



(a) true

(b)false

(c)true

(d)true

(e)true

1. If the lengths of three sides of a triangle are entered through the keyboard, write a program to check whether the triangle is an isosceles, an equilateral, a scalene or a right-angled triangle.

#include<stdio.h>

int main()

{

int x,y,z;

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

if(x\*x+y\*y==z\*z)

printf("The triangle is right angle");

else if((x==y) && (y==z))

{

printf("\nThe triangle is equilateral");

}

else if((x==z) && (x!=y) || (y==z) && (y!=x) || (x==y) && (x!=y))

{

printf("\nThe triangle is isoseles");

}

else

{

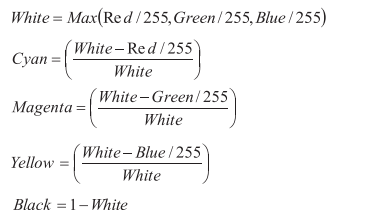
printf("\nThe triangle is scalene");

}

return 0;

}

1. In digital world colors are specified in Red-Green-Blue (RGB) format, with values of R, G, B varying on an integer scale from 0 to 255. In print publishing the colors are mentioned in Cyan-Magenta-Yellow Black (CMYK) format, with values of C, M, Y, and K varying on a real scale from 0.0 to 1.0. Write a program that converts RGB color to CMYK color as per the following formulae:



Note that if the RGB values are all 0, then the CMY values are all 0 and the K value is 1.

#include<stdio.h>

int main()

{

float r, g, b, c, m, y, k, w = 0;

printf("\nEnter the color values of R, G and B : ");

scanf("%f %f %f", &r, &g, &b);

r /= 255;

g /= 255;

b /= 255;

if(w < r)

w = r;

if(w < g)

w = g;

if(w < b)

w = b;

c = (w - r) / w;

m = (w - g) / w;

y = (w - b) / w;

k = 1 - w;

printf("\nC : %f\nM : %f\nY : %f\nK : %f", c,m,y,k);

return 0;

}

1. A certain grade of steel is graded according to the following conditions:

(i) Hardness must be greater than 50

(ii) Carbon content must be less than 0.7

(iii) Tensile strength must be greater than 5600

The grades are as follows:

Grade is 10 if all three conditions are met

Grade is 9 if conditions (i) and (ii) are met

Grade is 8 if conditions (ii) and (iii) are met

Grade is 7 if conditions (i) and (iii) are met

Grade is 6 if only one condition is met

Grade is 5 if none of the conditions are met

Write a program, which will require the user to give values of hardness, carbon content and tensile strength of the steel under consideration and output the grade of the steel.

#include<stdio.h>

int main()

{

int hard,tensile;

float carbon;

scanf("%d",&hard);

scanf("%f",&carbon);

scanf("%d",&tensile);

if(hard>50 && carbon<0.7 && tensile>5600)

printf("Grade is 10");

else if(hard>50 && carbon<0.7 && tensile<=5600)

printf("Grade is 9");

else if(hard<=50 && carbon<0.7 && tensile>5600)

printf("Grade is 8");

else if(hard>50 && carbon>=0.7 && tensile>5600)

printf("Grade is 7");

else if(hard>50 && carbon>=0.7 && tensile<=5600 || hard<=50 && carbon<0.7 && tensile<=5600 || hard<=50 && carbon>=0.7&&tensile>5600)

printf("Grade is 6");

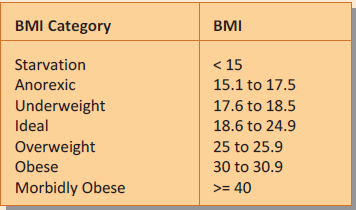
else

printf("Grade is 5");

return 0;

}

1. The Body Mass Index (BMI) is defined as ratio of the weight of a person (in kilograms) to the square of the height (in meters). Write a program that receives weight and height, calculates the BMI, and reports the BMI category as per the following table:



#include<stdio.h>

int main()

{

float w, h, bmi;

printf("\nEnter you wight (in kg) and height (in m) : ");

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

bmi = w / (h \* h);

printf("\nYour BMI category is : ");

if(bmi < 15)

printf("Starvation");

if(bmi >= 15.1 && bmi <= 17.5)

printf("Anorexic");

if(bmi >= 17.6 && bmi <= 18.5)

printf("Underweight");

if(bmi >= 18.6 && bmi <= 24.9)

printf("Ideal");

if(bmi >= 25 && bmi <= 25.9)

printf("Overweight");

if(bmi >= 30 && bmi <= 30.9)

printf("Obese.");

if(bmi >= 40)

printf("Morbidly Obese");

return 0;

}

**Using conditional operators determine:**

1. Whether the character entered through the keyboard is a lower case alphabet or not.

#include <stdio.h>

int main() {

char ch;

printf("Enter a character: ");

scanf(" %c", &ch);

printf("Character is %s lowercase alphabet.\n", (ch >= 'a' && ch <= 'z') ? "a" : "not a");

printf("Character is %s special symbol.\n", ((ch >= 33 && ch <= 47) || (ch >= 58 && ch <= 64) || (ch >= 91 && ch <= 96) || (ch >= 123 && ch <= 126)) ? "a" : "not a");

return 0;

}

1. Whether a character entered through the keyboard is a special symbol or not.

#include <stdio.h>

int main() {

char ch;

printf("Enter a character: ");

scanf(" %c", &ch);

printf("Character is %s lowercase alphabet.\n", (ch >= 'a' && ch <= 'z') ? "a" : "not a");

printf("Character is %s special symbol.\n", ((ch >= 33 && ch <= 47) || (ch >= 58 && ch <= 64) || (ch >= 91 && ch <= 96) || (ch >= 123 && ch <= 126)) ? "a" : "not a");

return 0;

}

1. Write a program using conditional operators to determine whether a year entered through the keyboard is a leap year or not.

#include <stdio.h>

int main() {

int year;

printf("Enter a year: ");

scanf("%d", &year);

printf("%d is %s leap year.\n", year, ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) ? "a" : "not a");

return 0;

}

1. Write a program to find the greatest of the three numbers entered through the keyboard. Use conditional operators.

#include <stdio.h>

int main() {

float num1, num2, num3, max;

printf("Enter three numbers: ");

scanf("%f %f %f", &num1, &num2, &num3);

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

printf("The greatest number is: %.2f\n", max);

return 0;

}

1. Write a program to receive value of an angle in degrees and check whether sum of squares of sine and cosine of this angle is equal to 1.

#include <stdio.h>

#include <math.h>

int main() {

float angle, sine, cosine, sum\_of\_squares;

printf("Enter the angle in degrees: ");

scanf("%f", &angle);

sine = sin(angle \* M\_PI / 180);

cosine = cos(angle \* M\_PI / 180);

sum\_of\_squares = sine \* sine + cosine \* cosine;

printf("Sum of squares of sine and cosine is %s equal to 1.\n", (sum\_of\_squares == 1) ? "" : "not");

return 0;

}

1. Rewrite the following program using conditional operators.

#include <stdio.h>

int main() {

float sal;

printf("Enter the salary: ");

scanf("%f", &sal);

printf("Occupation: %s\n", (sal >= 25000 && sal <= 40000) ? "Manager" : ((sal >= 15000 && sal < 25000) ? "Accountant" : "Clerk"));

return 0;

}

1. Write a C program to check if a number is a palindrome.

#include <stdio.h>

int main() {

int num, reversedNum = 0, remainder, originalNum;

printf("Enter an integer: ");

scanf("%d", &num);

originalNum = num;

while (num != 0) {

remainder = num % 10;

reversedNum = reversedNum \* 10 + remainder;

num /= 10;

}

if (originalNum == reversedNum) {

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

} else {

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

}

return 0;

}

1. Write a C program to find the factorial of a number.

#include <stdio.h>

int main() {

int n;

unsigned long long factorial = 1;

printf("Enter an integer: ");

scanf("%d", &n);

if (n < 0) {

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

} else {

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

factorial \*= i;

}

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

}

return 0;

}

1. Write a C program to check if a number is an Armstrong number.

#include <stdio.h>

#include <math.h>

int main() {

int num, originalNum, remainder, n = 0;

float result = 0.0;

printf("Enter an integer: ");

scanf("%d", &num);

originalNum = num;

while (originalNum != 0) {

originalNum /= 10;

++n;

}

originalNum = num;

while (originalNum != 0) {

remainder = originalNum % 10;

result += pow(remainder, n);

originalNum /= 10;

}

if ((int)result == num) {

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

} else {

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

}

return 0;

}