PROBLEMS

# 1.

Write a program that uses your personal number to extract your birthday.

# 2.

Write a program that will print the maximum of two number read from SI.

# 3.

Write a program that checks if given year read from SI is leap or not and prints out a appropriate message. The year is leap is divisible by 4 and not divisible by 100, or divisible by 400.

# 4.

The coordinates of a point are read from SI. Write a program that will print out the quadrant or the axis where the point belongs. If the point lays on the origin, print out a appropriate message.

# 5.

Write a program that will generate and print the grade according to the following table:

|  |  |
| --- | --- |
| Points | Grade |
| 0-49 | 5 |
| 50-59 | 6 |
| 60-69 | 7 |
| 70-79 | 8 |
| 80-89 | 9 |
| 90-100 | 10 |

# 6.

Change the previous program, so the sign of the number should be printed (+/-) depending on the last digit of the points number:

|  |  |
| --- | --- |
| Last digit | Sign |
| 1-2 | - |
| 3-6 | <blank space> |
| 7-0 | + |

# 7.

Read from standard input three numbers in arbitrary order. The numbers are lengths of triangle sides. Write a program that will check if triangle can be constructed from given lengths, if so, then should check if the triangle is right triangle and compute its area. On contrary, appropriate messages should be printed.

# 8.

For three segments read from SI, the program should check if a triangle can be formed, then print the kind.

# 9.

For given center of circle and it’s radius the program should determine the quadrants it is overlapping.

# 10.

Milan and marco are playing a 3 round card game. Each round carries a different percentage of the player's total points. First round carries 25%, second round 35% and third round carries 40% of total points. At the input, the points are entered alternately x1, y1, x2, y2, x3, y3 where x are the points of Milan, while y are the points of Marco. In addition, the winner of the game depends on the letter that will be entered in the next line if p is entered the winner is the player with more points, if n is entered the winner is the player with fewer points.).Your task is to print the total points of milan and marco, and in the second line, print who is the winner. If they have the same number of points, there is no winner.

# 11.

For one student, points obtained from 5 activities for one subject are read. A condition for a subject to be passed is to have over 50 points. If the student has 0-50 points he does not pass the subject, if he has 51-60 he passes it with 6, 61-70 he passes it with 7, 71-80 he passes it with 8, 81-90 he passes it with 9 and above 90 he passes it with 10. Print the grade that the student had, his points and to print 1 if there is a requirement to get a higher grade, and otherwise 0.

# 12.

From SI, three numbers are loaded that indicate the times (in minutes) with which three competitors ran 5 km at the Skopje Marathon. To print the sequence number of the fastest competitor. If more than one competitor has the fastest time, the serial numbers of all such competitors are printed.

# 13.

Write a program that for a date read from SI (in the format DD MM YYYY) will print on standard output a message YES if the date is correct and possible, or NO if the date is not correct. When deciding whether the date is correct or not correct, you have to consider the following factors:  
-is the month between January and December (1-12)  
-does the number for days correspond with the number of days in the specified month  
-if the month is February, is the year leap?  
-Leap years are those years who are divisible with 400, or they are divisible with 4, but not with 100.

# 14.

A number N is read from SI. The program should print on SO “Tik” if the number is divisible by 3, “Tak” if the number is divisible by 5 or “Tik-Tak” if the number is divisible by both 3 and 5. If the number is not divisible by 3 nor 5, than a message “Bad number” should be printed.

# 15.

Write a program that for a three digit number read from SI will check if it is a palindrome or not and will print out an appropriate message. The message is “Palindrome” if it is and “Not palindrome if it is not. If the number is not a three digit number, write a message “Wrong input”.

# 16.

Three natural numbers **А**, **B** and **C** are entered from the SI.

Write a program that will check if the three entered numbers can represent the values of the angles (in degrees) of a triangle. If the values can represent angles of a triangle print YES in the first line of the standard output followed by type of the triangle (RIGHT, ACUTE or OBTUSE) in the next line. If triangle is not possible with the tree given angles print NO in a single line.

# 17.

Time is inserted in international form (4 values: hour - from 1 to 12, minutes - from 0 to 59, seconds - from 0 to 59 and sign A if it is from midnight to morning or P if it is noon to midnight). Present the time in the Macedonian format.

# 18.

Time is inserted in Macedonian format (3 values: hour – from 0 to 23, minutes - from 0 to 59 and seconds - from 0 to 59 ). Present the time in international format.

# 19.

Write a program for simple calculator. The program reads two numbers and operator in format:

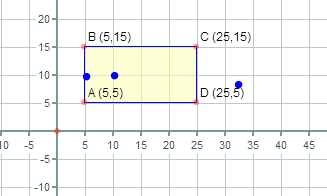
* num1 operator num2

After the operation, depending on the operator, the result should be printed in format:

* num1 operator num2 = result

# 20.

A rectangle located in the first quadrant is given. The rectangle is defined by the coordinates (x,y) of the two opposite corners of the rectangle: A (bottom left) and C (top right). The coordinates are integers and are read from SI. After reading the coordinates of the points A and C, the program reads coordinates of two other points (P1 and P2) also from SI. Write a program that, for each of the two points P1 and P2, will print YES if the point lays over the edge of the rectangle (on the sides of the rectangle) or NO otherwise (lays in or outside the rectangle).



# 21.

write a program in which one character is read from the keyboard. The program should check if the character is a letter. If it is a letter, it should check if it is vowel or consonant and print the corresponding message. Additionally, you should check if the character is a digit or a special character and print the appropriate one message.

# 22.

Write a program that for a read character from SI will print if it is a vowel, digit or something else.

SOLUTIONS

# 1.

#include **<stdio.h>  
  
int** main(){  
 **long long int** PersonalNumber;  
 **int** day, month, year;  
 printf(**"Enter your Personal Number!\n"**);  
 scanf(**"%lld"**, &PersonalNumber);  
 day= PersonalNumber / 100000000000;  
 month= (PersonalNumber / 1000000000) % 100;  
 year= (PersonalNumber / 1000000) % 1000;  
 **if** (year <= 22) {  
 printf(**"From your Personal Number we found out that your birthday date is: %.2d.%.2d.%d"**, day, month, year + 2000);  
 } **else**{  
 printf(**"From your Personal Number we found out that your birthday date is: %.2d.%.2d.%d"**, day, month, year + 1000);  
 }  
 **return** 0;  
}

# 2.

#include **<stdio.h>  
  
int** main(){  
 **int** a,b;  
 scanf(**"%d%d"**,&a,&b);  
 **if**(a>b){  
 printf(**"%d"**,a);  
 } **else**{  
 printf(**"%d"**,b);  
 }  
 **return** 0;  
}

# 3.

#include **<stdio.h>  
  
int** main(){  
 **int** year;  
 printf(**"Enter a year!\n"**);  
 scanf(**"%d"**, &year);  
 **if**((year%4==0)&&(year%100!=0)||(year%400==0)){  
 printf(**"Year %d is a leap.\n"**,year);  
 }**else**{  
 printf(**"Year %d is not a leap.\n"**,year);  
 }  
 **return** 0;  
}

# 4.

#include **<stdio.h>  
  
int** main(){  
 **float** x,y;  
 scanf(**"%f%f"**,&x,&y);  
 **if**(x==0 && y==0){  
 printf(**"Origin"**);  
 **return** 0;  
 }  
 **if**(x>0){  
 **if**(y>0){  
 printf(**"I quadrant.\n"**);  
 }  
 **else if**(y<0){  
 printf(**"IV quadrant.\n"**);  
 }  
 **else**{  
 printf(**"Positive x-axis.\n"**);  
 }  
 }  
 **else if**(x<0){  
 **if** (y>0){  
 printf(**"II quadrant.\n"**);  
 }  
 **else if**(y<0){  
 printf(**"III quadrant.\n"**);  
 }  
 **else**{  
 printf(**"Negative y-axis.\n"**);  
 }  
 } **else**{  
 **if**(y>0){  
 printf(**"Positive y-axis.\n"**);  
 }  
 **else if**(y<0){  
 printf(**"Negative y-axis.\n"**);  
 }  
 }  
 **return** 0;  
}

Another way

#include **<stdio.h>  
  
int** main() {  
 **float** x, y;  
 printf(**"Enter your x and y coordinates.\n"**);  
 scanf(**"%f%f"**, &x, &y);  
 printf(**"Your point is on the "**);  
 **if**(x==0 && y==0){  
 printf(**"Origin"**);  
 **return** 0;  
 }  
 **if**(x==0){  
 printf(**"y-axis"**);  
 **return** 0;  
 }  
 **if**(y==0){  
 printf(**"x-axis"**);  
 **return** 0;  
 }  
 **if**(x>0){  
 **if**(y>0){  
 printf(**"I quadrant"**);  
 }  
 **else**{*//x<0* printf(**"IV quadrant"**);  
 }  
 }  
 **if**(x<0){  
 **if**(y>0){  
 printf(**"II quadrant"**);  
 }  
 **else**{*//y<0* printf(**"III quadrant"**);  
 }  
 }  
 **return** 0;  
}

# 5.

#include **<stdio.h>  
  
int** main() {  
  
 **int** points,grade;  
 printf(**"Enter your points.\n"**);  
 scanf(**"%d"**, &points);  
 grade = points / 10 + 1;  
 **if** (grade <= 5) {  
 grade = 5;  
 }  
 **if** (grade > 10) {  
 grade = 10;  
 }  
 printf(**"Your grade is: %d"**, grade);  
 **return** 0;  
}  
  
*// more complex solution  
// if (points >= 90) {  
// grade = 10;  
// } else if (points >= 80) {  
// grade = 9;  
// } else if (points >= 70) {  
// grade = 8;  
// } else if (points >= 60) {  
// grade = 7;  
// } else if (points >= 50) {  
// grade = 6;  
// } else {  
// grade = 5;  
// }  
//printf("Your grade is: %d", grade);*

# 6.

#include **<stdio.h>  
  
int** main(){  
 **int** points,grade;  
 printf(**"Enter your points: \n"**);  
 scanf(**"%d"**,&points);  
 **if**(points<0 || points>100){  
 printf(**"Your points are invalid!\n"**);  
 **return** 0;  
 }  
 **else**{  
 **if**(points>90){  
 grade=10;  
 }  
 **else if**(points>80){  
 grade=9;  
 }  
 **else if**(points>70){  
 grade=8;  
 }  
 **else if**(points>60){  
 grade=7;  
 }  
 **else if**(points>50){  
 grade=6;  
 }  
 **else**{  
 grade=5;  
 }  
 }  
 **char** sign;  
 **int** lastDigit;  
 lastDigit=points%10;  
 **if**(grade!=5){  
 **if**(lastDigit>=0 && lastDigit<=3){  
 sign=**'-'**;  
 }  
 **else if**(lastDigit>=8||lastDigit==0){  
 sign=**'+'**;  
 }  
 printf(**"Your grade is: %d%c"**,grade,sign);  
 }  
  
 **return** 0;  
}

Another way

#include **<stdio.h>  
  
int** main() {  
 **int** points,grade;  
 **char** sign;  
 printf(**"Enter the number of points.\n"**);  
 scanf(**"%d"**,&points);  
 **int** lastDigit=points%10;  
 **if**(lastDigit<=2){  
 sign=**'-'**;  
 }  
 **if**(lastDigit>=7){  
 sign=**'+'**;  
 }  
 grade=points/10+1;  
 **if**(grade<=5){  
 grade=5;  
 sign=**' '**;  
 }  
 **if**(grade==10){  
 sign=**' '**;  
 }  
 **if**(grade>10){  
 grade=10;  
 sign=**' '**;  
 }  
 printf(**"Your grade is: %d%c"**,grade,sign);  
  
 **return** 0;  
}

# 7.

#include**<stdio.h>**#include **<math.h>  
  
int** main() {  
 **float** a, b, c, tmp;  
 printf(**"Enter the sides of the triangle.\n"**);  
 scanf(**"%f%f%f"**,&a,&b,&c);  
 **if**(a<=0 || b<=0 || c<=0){  
 printf(**"The sides of the tiangle must be greater than 0"**);  
 **return** 0;  
 }  
 *//1. Check if we can construct a triangle* **if**(a+b>c && a+c>b && b+c>a){  
 *//intermediate step -> sort the numbers in ascending order* **if**(a>b){  
 tmp=b;  
 b=a;  
 a=tmp;  
 }  
 **if**(b>c){  
 tmp=c;  
 c=b;  
 b=tmp;  
 }  
 **if**(a>c){  
 tmp=c;  
 c=a;  
 a=tmp;  
 }  
 *//2. Check whether it's a right triangle* **if**(a\*a+b\*b==c\*c){  
 **float** area=a\*b/2;  
 printf(**"The area of the right triangle is %.2f."**,area);  
 }  
 **else**{  
 printf(**"The triangle is not a right triangle."**);  
 }  
 }  
 **else**{  
 printf(**"You cannot construct a triangle with sides %.2f, %.2f and %.2f.\n"**,a,b,c);  
 printf(**"You should follow this rule:\na+b>c && a+c>b && b+c>a\n"**);  
 printf(**"In this case: %.2f+%.2f>%.2f && %.2f+%.2f>%.2f && %.2f+%.2f>%.2f\n"**,a,b,c,a,c,b,b,c,a);  
 printf(**"Which is fale, because all the cases should be true!"**);  
 }  
  
 **return** 0;  
}

# 8.

#include**<stdio.h>  
  
int** main() {  
 **float** a,b,c;  
 scanf(**"%f%f%f"**,&a,&b,&c);  
 **if**(a+b>c && a+c>b && b+c>a){  
 printf(**"A triangle can be constructed.\n"**);  
 } **else**{  
 printf(**"A triangle can not be constructed."**);  
 **return** 0;  
 }  
 **if**(a\*a+b\*b==c\*c || a\*a+c\*c==b\*b || c\*c+b\*b==a\*a){  
 printf(**"Right triangle."**);  
 }**else if**(a==b && a==c && c==b){  
 printf(**"Equilateral triangle"**);  
 }**else if**(a==b || a==c || c==b){  
 printf(**"Isosceles triangle"**);  
 } **else**{  
 printf(**"Regular triangle"**);  
 }  
 **return** 0;  
}

# 9.

#include**<stdio.h>**#include**<math.h>****int** main() {  
 **float** x, y, r;  
 printf(**"Enter the x and y coordinates.\n"**);  
 scanf(**"%f%f"**,&x,&y);  
 printf(**"Enter the radius of the circle\n"**);  
 scanf(**"%f"**,&r);  
 printf(**"The circle with radius %.2f and center C(%.2f, %.2f) overlaps these quadrants:\n"**,r,x,y);  
 **if**(x>0 && y>0){  
 **if**(r<=x && r<=y){  
 printf(**"I"**);  
 }  
 **else if**(r<=x && r>y){  
 printf(**"I and IV"**);  
 }  
 **else if**(r>x && r<=y){  
 printf(**"I and II"**);  
 }  
 **else if**(r>x && r>y && r<= sqrt(x\*x+y\*y)){  
 printf(**"I, II and IV"**);  
 }  
 **else if**(r>x && r>y && r> sqrt(x\*x+y\*y)){  
 printf(**"I, II, III and IV"**);  
 }  
 }  
 **if**(x>0 && y<0){  
 **if**(r<=x && r<=abs(y)){  
 printf(**"IV"**);  
 }  
 **else if**(r<=x && r>abs(y)){  
 printf(**"I and IV"**);  
 }  
 **else if**(r>x && r<=abs(y)){  
 printf(**"III and IV"**);  
 }  
 **else if**(r>x && r>abs(y) && r<= sqrt(x\*x+y\*y)){  
 printf(**"I, III and IV"**);  
 }  
 **else if**(r>x && r>abs(y) && r> sqrt(x\*x+y\*y)){  
 printf(**"I, II, III and IV"**);  
 }  
 }  
 **if**(x<0 && y>0){  
 **if**(r<=abs(x) && r<=y){  
 printf(**"III"**);  
 }  
 **else if**(r<=abs(x) && r>y){  
 printf(**"II and III"**);  
 }  
 **else if**(r>abs(x) && r<=y){  
 printf(**"I and II"**);  
 }  
 **else if**(r>abs(x) && r>y && r<= sqrt(x\*x+y\*y)){  
 printf(**"I, II and III"**);  
 }  
 **else if**(r>abs(x) && r>y && r> sqrt(x\*x+y\*y)){  
 printf(**"I, II, III and IV"**);  
 }  
 }  
 **if**(x<0 && y<0){  
 **if**(r<=abs(x) && r<=abs(y)){  
 printf(**"III"**);  
 }  
 **else if**(r<=abs(x) && r>abs(y)){  
 printf(**"II and III"**);  
 }  
 **else if**(r>abs(x) && r<=abs(y)){  
 printf(**"III and IV"**);  
 }  
 **else if**(r>abs(x) && r>abs(y) && r<= sqrt(x\*x+y\*y)){  
 printf(**"II, III, IV"**);  
 }  
 **else if**(r>abs(x) && r>abs(y) && r> sqrt(x\*x+y\*y)){  
 printf(**"I, II, III and IV"**);  
 }  
 }  
 **if**(x>0 && y==0){  
 **if**(r<=x){  
 printf(**"I and IV"**);  
 }  
 **else if**(r>x){  
 printf(**"I, II, III and IV"**);  
 }  
 }  
 **if**(x<0 && y==0){  
 **if**(r<=abs(x)){  
 printf(**"II and III"**);  
 }  
 **else if**(r>abs(x)){  
 printf(**"I, II, III and IV"**);  
 }  
 }  
 **if**(x==0 && y>0){  
 **if**(r<=y){  
 printf(**"I and II"**);  
 }  
 **else if**(r>y){  
 printf(**"I, II, III and IV"**);  
 }  
 }  
 **if**(x==0 && y<0){  
 **if**(r<=abs(y)){  
 printf(**"III and IV"**);  
 }  
 **else if**(r>abs(y)){  
 printf(**"I, II, III and IV"**);  
 }  
 }  
 **if**(x==0 && y==0){  
 printf(**"I, II, II and IV"**);  
 }  
 **return** 0;  
}

Another way

#include**<stdio.h>**#include **<math.h>  
int** main() {  
 **float** x, y;  
 **float** radius;  
 **int** q1 = 0, q2 = 0, q3 = 0, q4 = 0;  
 scanf(**"%f %f %f"**, &x, &y, &radius);  
  
 **if** (x == 0 && y == 0) {  
 printf(**"1111"**);  
 **return** 0;  
 }  
  
 **if** (x > 0 && y > 0) {*//I* **if**(radius<=y){  
 q1 = 1;  
 }  
 **if** (radius > y) {  
 q4 = 1;  
 }  
 **if** (radius > x) {  
 q2 = 1;  
 }  
 **if** (radius\*radius > (x\*x)+(y\*y)){  
 q3=1;  
 }  
 }  
 **if** (x > 0 && y < 0) {*//IV* **if**(radius<=abs(y)){  
 q4 = 1;  
 }  
 **if** (radius > abs(y)) {  
 q1 = 1;  
 }  
 **if** (radius > x) {  
 q3 = 1;  
 }  
 **if** (radius\*radius > (x\*x)+(y\*y)){  
 q2=1;  
 }  
 }  
 **if** (x < 0 && y > 0) {*//II* **if**(radius<=y ){  
 q2 = 1;  
 }  
 **if** (radius > y) {  
 q3 = 1;  
 }  
 **if** (radius > abs(x)) {  
 q1 = 1;  
 }  
 **if** (radius\*radius > (x\*x)+(y\*y)){  
 q4=1;  
 }  
 }  
 **if** (x < 0 && y < 0) {*//III* **if**(radius<=abs(y)){  
 q3 = 1;  
 }  
 **if** (radius > abs(y)) {  
 q2 = 1;  
 }  
 **if** (radius > abs(x)) {  
 q4 = 1;  
 }  
 **if** (radius\*radius > (x\*x)+(y\*y)){  
 q1=1;  
 }  
 }  
 printf(**"%d%d%d%d"**,q1,q2,q3,q4);  
 **return** 0;  
}

# 10.

#include**<stdio.h>  
  
int** main () {  
 **float** x1,x2,x3,y1,y2,y3;  
 printf(**"Enter the points\n"**);  
 scanf(**"%f %f %f %f %f %f\n"**,&x1,&y1,&x2,&y2,&x3,&y3);  
 printf(**"Enter 'p' or 'n'.\n"**);  
 **char** c;  
 scanf(**"%c"**,&c);  
  
 **float** MilanPoints=x1\*25/100.0+x2\*35/100.0+x3\*40/100.0;  
 **float** MarcoPoints=y1\*25/100.0+y2\*35/100.0+y3\*40/100.0;  
 printf(**"%.2f %.2f\n"**,MilanPoints, MarcoPoints);  
 **if**(MilanPoints==MarcoPoints){  
 printf(**"There is no winner.\n"**);  
 **return** 0;  
 }  
 **else**{  
 **switch** (c) {  
 **case 'p'**:{  
 **if**(MilanPoints>MarcoPoints){  
 printf(**"Milan is the winner.\n"**);  
 }  
 **else** {  
 printf(**"Marco is the winner.\n"**);  
 }  
 }  
 **break**;  
 **case 'n'**:{  
 **if**(MilanPoints<MarcoPoints){  
 printf(**"Milan is the winner.\n"**);  
 } **else**{  
 printf(**"Marco is the winner.\n"**);  
 }  
 }  
  
 }  
 }  
 **return** 0;  
}

# 11.

#include**<stdio.h>  
  
int** main () {  
 **int** a1,a2,a3,a4,a5, grade;  
 scanf(**"%d%d%d%d%d"**,&a1,&a2,&a3,&a4,&a5);  
 **int** points=a1+a2+a3+a4+a5;  
 **if**(points<=50){  
 printf(**"Failed"**);  
 } **else**{  
 **if**(points>=51 && points<=60){  
 grade=6;  
 }  
 **if**(points>=61 && points<=70){  
 grade=7;  
 }  
 **if**(points>=71 && points<=80){  
 grade=8;  
 }  
 **if**(points>=81 && points<=90){  
 grade=9;  
 }  
 **if**(points>=91){  
 grade=10;  
 }  
 }  
 printf(**"Grade: %d, points: %d\n%d"**,grade,points,(points%10==9));  
  
}

# 12.

#include **<stdio.h>***//from SI, three numbers are loaded that indicate the times (in minutes) with which three competitors ran 5 km  
// at the Skopje Marathon.  
//To print the sequence number of the fastest competitor.  
// If more than one competitor has the fastest time, the serial numbers of all such competitors are printed.***int** main () {  
 **float** c1,c2,c3;  
 scanf(**"%f%f%f"**, &c1,&c2,&c3);  
 **int** competitor1=0, competitor2=0, competitor3=0;  
 **if**(c1==c2 && c1==c3 && c2==c3){  
 printf(**"123"**);  
 **return** 0;  
 }**else**{  
 **if**(c1<c2 && c1<c3){  
 competitor1=1;  
 printf(**"%d"**,competitor1);  
 }  
 **if**(c2<c1 && c2<c3){  
 competitor2=2;  
 printf(**"%d"**,competitor2);  
 }  
 **if**(c3<c2 && c3<c1){  
 competitor3=3;  
 printf(**"%d"**,competitor3);  
 }  
 **if**(c1==c2 && c1<c3 && c2<c3){  
 competitor2=2;  
 competitor1=1;  
 printf(**"%dd"**,competitor1,competitor2);  
 }  
 **if**(c1==c3 && c1<c2 && c3<c2){  
 competitor3=3;  
 competitor1=1;  
 printf(**"%dd"**,competitor1,competitor3);  
 }  
 **if**(c3==c2 && c3<c1 && c2<c1){  
 competitor2=2;  
 competitor1=1;  
 printf(**"%dd"**,competitor2,competitor3);  
 }  
 }  
 }

# 13.

With if-else

#include**<stdio.h>  
  
int** main () {  
 **int** date, day,month,year;  
 scanf(**"%d"**,&date);  
  
 day=date/1000000;  
 month=(date/10000)%100;  
 year=date%10000;  
  
 **if**( (month>=1 && month<=12)){  
 **if**(day>=1 &&day<=31 && (month==1 || month==3 || month==5 || month==7 || month==8 || month==10 || month==12)){  
 printf(**"YES"**);  
 }  
 **else if**(day>=1 && day<=30 && (month==4 || month==6 || month==9 || month==11)){  
 printf(**"YES"**);  
 }  
 **else if**(day>=1 && day<=28 && month==2){  
 printf(**"YES"**);  
 }  
 **else if**(day==29 && month==2 && ((year%4==0 && year%100!=0) || year%400==0)){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
  
 }**else**{  
 printf(**"NO"**);  
 }  
}  
  
With switch  
#include **<stdio.h>  
  
int** main(){  
 **int** day,month,year;  
 scanf(**"%d %d %d"**,&day, &month, &year);  
 **switch** (month){  
 **case** 1: {*//jan* **if**(day>=1 && day<=31){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **case** 2: {*//feb* **if**(day==29){  
 **if**(year%4==0 && year%100!=0 || year%4==0){  
 printf(**"YES"**);  
 }**else**{  
 printf(**"NO"**);  
 }  
 } **else if**(day>=1 && day<=28){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **case** 3:{*//mar* **if**(day>=1 && day<=31){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **case** 4:{*//apr* **if**(day>=1 && day<=30){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **case** 5:{*//may* **if**(day>=1 && day<=31){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **case** 6:{*//june* **if**(day>=1 && day<=30){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **case** 7:{*//july* **if**(day>=1 && day<=31){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **case** 8:{*//aug* **if**(day>=1 && day<=31){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **case** 9:{*//sep* **if**(day>=1 && day<=30){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **case** 10:{*//oct* **if**(day>=1 && day<=31){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **case** 11:{*//nov* **if**(day>=1 && day<=30){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **case** 12:{*//dec* **if**(day>=1 && day<=31){  
 printf(**"YES"**);  
 } **else**{  
 printf(**"NO"**);  
 }  
 **break**;  
 }  
 **default**:  
 printf(**"NO"**);  
 }  
 **return** 0;  
}

# 14.

#include **<stdio.h>  
  
int** main(){  
 **int** N;  
 scanf(**"%d"**,&N);  
 **if**(N%3==0 && N%5==0){  
 printf(**"Tik-Tak"**);  
 } **else**{  
 **if**(N%3==0){  
 printf(**"Tik"**);  
 } **else**{  
 **if**(N%5==0){  
 printf(**"Tak"**);  
 } **else**{  
 printf(**"Bad number"**);  
 }  
 }  
 }  
 **return** 0;  
}

# 15.

#include **<stdio.h>  
  
int** main(){  
 **int** n;  
 scanf(**"%d"**,&n);  
 **if**(n/100>9){  
 printf(**"Wrong input"**);  
 **return** 0;  
 }  
 **if**(n/100==n%10){  
 printf(**"Palindrome"**);  
 } **else**{  
 printf(**"Not Palindrome"**);  
 }  
 **return** 0;  
}

# 16.

#include **<stdio.h>  
  
int** main() {  
 **int** a,b,c;  
 scanf(**"%d%d%d"**,&a,&b,&c);  
 **if**(a+b+c==180){  
 printf(**"YES\n"**);  
 **if**(a==90 || b==90 || c==90){  
 printf(**"RIGHT"**);  
 }  
 **else if**(a>90 || b>90 || c>90){  
 printf(**"OBTUSE"**);  
 }  
 **else**{  
 printf(**"ACUTE"**);  
 }  
 } **else**{  
 printf(**"NO"**);  
 }  
 **return** 0;  
}

# 17.

#include **<stdio.h>  
  
int** main(){  
 **int** h,min,sec;  
 **char** c;  
 scanf(**"%d%d%d\n"**,&h,&min,&sec);  
 scanf(**"%c"**,&c);  
  
 **if**(c==**'A'**){  
 **if**(h>=12){  
 printf(**"%.2d:%d:%d"**,h-12,min,sec);  
 } **else**{  
 printf(**"%.2d:%d:%d"**,h,min,sec);  
 }  
 } **else if**(c==**'P'**){  
 **if**(h<12){  
 printf(**"%.2d:%d:%d"**,h+12,min,sec);  
 } **else**{  
 printf(**"%.2d:%d:%d"**,h,min,sec);  
 }  
 }  
 **return** 0;  
}

# 18.

#include **<stdio.h>  
  
int** main() {  
 **int** h,min,sec;  
 scanf(**"%d%d%d"**,&h,&min,&sec);  
 **if**(h==12){  
 printf(**"%.2d:%.2d:%.2d %c"**,12,min,sec,**'P'**);  
 **return** 0;  
 }  
 **if**(h==0){  
 printf(**"%.2d:%.2d:%.2d %c"**,12,min,sec,**'A'**);  
 **return** 0;  
 }  
 **if**(h<12){  
 printf(**"%.2d:%.2d:%.2d %c"**,h,min,sec,**'A'**);  
 } **else**{  
 printf(**"%.2d:%.2d:%.2d %c"**,h-12,min,sec,**'P'**);  
 }  
 **return** 0;  
}

# 19.

#include **<stdio.h>  
  
int** main() {  
 **int** a,b;  
 **char** operator;  
 scanf(**"%d%c%d"**,&a,&operator,&b);  
 **if**(operator!=**'+'** || operator!=**'-'** || operator!=**'\*'** || operator!=**'/'** || operator!=**'%'**){  
 **return** 0;  
 }  
 **if**(operator==**'+'**){  
 printf(**"%d %c %d = %d"**,a,operator,b,a+b);  
 **return** 0;  
 }  
 **if**(operator==**'-'**){  
 printf(**"%d %c %d = %d"**,a,operator,b,a-b);  
 **return** 0;  
 }  
 **if**(operator==**'\*'**){  
 printf(**"%d %c %d = %d"**,a,operator,b,a\*b);  
 **return** 0;  
 }  
 **if**(operator==**'/'**){  
 **if**(b==0){  
 printf(**"You can not divide by zero!"**);  
 **return** 0;  
 } **else**{  
 printf(**"%d %c %d = %.2f"**,a,operator,b,(**float**)a/b);  
 **return** 0;  
 }  
 }  
 **if**(operator==**'%'**){  
 **if**(b==0){  
 printf(**"You can not divide by zero!"**);  
 **return** 0;  
 } **else**{  
 printf(**"%d %c %d = %d"**,a,operator,b,a%b);  
 **return** 0;  
 }  
 }  
 **return** 0;  
}

Switch

#include**<stdio.h>  
  
int** main() {  
 **int** a,b;  
 **char** operation;  
 scanf(**"%d%c%d"**,&a,&operation,&b);  
 **switch** (operation) {  
 **case '+'**:  
 printf(**"%d + %d = %d"**,a,b,a+b); **break**;  
 **case '-'**:  
 printf(**"%d - %d = %d"**,a,b,a-b); **break**;  
 **case '\*'**:  
 printf(**"%d \* %d = %d"**,a,b,a\*b); **break**;  
 **case '/'**:  
 **if**(b==0){  
 printf(**"You cannot divide by 0!"**);  
 }**else** printf(**"%d / %d = %.2f"**,a,b,(**float** )a/b); **break**;  
 **case '%'**:  
 **if**(b==0){  
 printf(**"You cannot divide by 0!"**);  
 }**else** printf(**"%d %% %d = %d"**,a,b,a%b); **break**;  
 **default**:  
 printf(**"Invalid operation"**);  
 }  
 **return** 0;  
}

# 20.

#include **<stdio.h>  
  
int** main (){  
 **int** x\_A,x\_C,x\_P1,x\_P2,y\_A,y\_C,y\_P1,y\_P2;  
 scanf(**"%d%d"**,&x\_A,&y\_A);  
 scanf(**"%d%d"**,&x\_C,&y\_C);  
 scanf(**"%d%d"**,&x\_P1,&y\_P1);  
 scanf(**"%d%d"**,&x\_P2,&y\_P2);  
 **if**(x\_P1==x\_A && (y\_P1>=y\_A && y\_P1<=y\_C)){  
 printf(**"YES\n"**);  
 } **else if**(x\_P1==x\_C && (y\_P1>=y\_A && y\_P1<=y\_C)){  
 printf(**"YES\n"**);  
 } **else if**(y\_P1==y\_A && (x\_P1>=x\_A && x\_P1<=x\_C)){  
 printf(**"YES\n"**);  
 } **else if**(y\_P1==y\_C && (x\_P1>=x\_A && x\_P1<=x\_C)){  
 printf(**"YES\n"**);  
 } **else**{  
 printf(**"NO\n"**);  
 }  
 **if**(x\_P2==x\_A && (y\_P2>=y\_A && y\_P2<=y\_C)){  
 printf(**"YES\n"**);  
 } **else if**(x\_P2==x\_C && (y\_P2>=y\_A && y\_P2<=y\_C)){  
 printf(**"YES\n"**);  
 } **else if**(y\_P2==y\_A && (x\_P2>=x\_A && x\_P2<=x\_C)){  
 printf(**"YES\n"**);  
 } **else if**(y\_P2==y\_C && (x\_P2>=x\_A && x\_P2<=x\_C)){  
 printf(**"YES\n"**);  
 } **else**{  
 printf(**"NO\n"**);  
 }  
 **return** 0;  
}

# 21.

#include **<stdio.h>  
  
int** main(){  
 **char** c;  
 scanf(**"%c"**,&c);  
 **if**(c>=**'A'** && c<=**'Z'** || c>=**'a'** && c<=**'z'**){  
 **if**(c==**'a'** || c==**'e'** || c==**'i'** || c==**'o'** || c==**'u'** || c==**'A'** || c==**'E'** || c==**'I'** || c==**'O'** || c==**'U'**){  
 printf(**"The chararcter is a letter and it is a vowel."**);  
 **return** 0;  
 } **else**{  
 printf(**"The chararcter is a letter and it is a consonant."**);  
 **return** 0;  
 }  
 }  
 **if**(c>=**'0'** && c<=**'9'**){  
 printf(**"The character is a digit."**);  
 **return** 0;  
 } **else**{  
 printf(**"The character is a special character."**);  
 }  
 **return** 0;  
}

# 22.

# 23.

#include **<stdio.h>**#include **<math.h>**#define **pi** 3.141459  
  
**int** main() {  
 printf(**"Enter the sides of a triangle: a, b and c.\nWhen you enter the sides of the triangle be sure to follow these rules:\na+b>c ; a+c>b ; b+c>a\n"**);  
 **double** a,b,c;  
 printf(**"a ="**);  
 scanf(**"%lf"**,&a);  
 printf(**"b ="**);  
 scanf(**"%lf"**,&b);  
 printf(**"c ="**);  
 scanf(**"%lf"**,&c);  
 **if**(a+b<=c || a+c<=b || b+c<=a){  
 printf(**"You didn't follow the rule.\nNow run the program again and follow the rule!"**);  
 **return** 0;  
 }  
 **if**(a==b && b==c && a==c){  
 printf(**"Your triangle is EQUILATERAL, all sides are equal.\n"**);  
 } **else if**((a\*a+b\*b==c\*c || a\*a+c\*c==b\*b || c\*c+b\*b==a\*a) && (a==b || a==c || c==b)){  
 printf(**"Your triangle is ISOSCELES RIGHT TRIANGLE, where two sides are equal and has a right angle.\n"**);  
 } **else if**(a==b || a==c || c==b){  
 printf(**"Your triangle is ISOSCELES, where two sides are equal.\n"**);  
 }**else if**(a\*a+b\*b==c\*c || a\*a+c\*c==b\*b || c\*c+b\*b==a\*a){  
 printf(**"Your triangle is a RIGHT TRIANGLE.\n"**);  
 } **else**{  
 printf(**"Your triangle is different sided triangle\n"**);  
 }  
 **double** perimeter,semiPerimeter,area,angle\_ab,angle\_ac,angle\_bc,h\_a,h\_b,h\_c,x\_a,x\_b,x\_c,r,R,aR,ar,pR,pr;  
 perimeter=a+b+c;  
 semiPerimeter=perimeter/2;  
 area= sqrt(semiPerimeter\*(semiPerimeter-a)\*(semiPerimeter-b)\*(semiPerimeter-c));  
 angle\_ab= asin((2\*area)/(a\*b))\*180/**pi**;  
 angle\_ac= asin((2\*area)/(a\*c))\*180/**pi**;  
 angle\_bc= asin((2\*area)/(b\*c))\*180/**pi**;  
 x\_a=(a\*a+b\*b-c\*c)/(2\*a);  
 x\_b=(b\*b+c\*c-a\*a)/(2\*b);  
 x\_c=(a\*a+c\*c-b\*b)/(2\*c);  
 h\_a= sqrt(b\*b-(x\_a\*x\_a));  
 h\_b= sqrt(c\*c-(x\_b\*x\_b));  
 h\_c= sqrt(a\*a-(x\_c\*x\_c));  
 R=(a\*b\*c)/(4\*area);  
 aR=**pi**\*R\*R;  
 pR=2\***pi**\*R;  
 r=area/semiPerimeter;  
 ar=**pi**\*r\*r;  
 pr=2\***pi**\*r;  
 printf(**"Perimeter = %.2lf\nSemiperimeter = %.2lf\nArea = %.2lf\n"**,perimeter,semiPerimeter,area);  
 printf(**"Angle between a and b = %.2lf deg.\nAngle between a and c = %.2lf deg.\nAngle between b and c = %.2lf deg.\n"**,angle\_ab,angle\_ac,angle\_bc);  
 printf(**"The height prependicular to a = %.2lf\nThe height prependicular to b = %.2lf\nThe height prependicular to c = %.2lf\n"**,h\_a,h\_b,h\_c);  
 printf(**"The radius of the inner circle of the triangle = %.2lf\nThe perimeter of the inner circle of the triangle = %.2lf\nThe area of the inner circle of the triangle = %.2lf\n"**,r,pr,ar);  
 printf(**"The radius of the outer circle of the triangle = %.2lf\nThe perimeter of the outer circle of the triangle = %.2lf\nThe area of the outer circle of the triangle = %.2lf\n"**,R,pR,aR);  
 **return** 0;  
}