Calculate the angle between hour hand and minute hand

This problem is know as Clock angle problem where we need to find angle between hands of an analog clock at a given time.

Examples:

```
Input: h = 12:00, m = 30.00
Output: 165 degree

Input: h = 3.00, m = 30.00
Output: 75 degree
```

We strongly recommend that you click here and practice it, before moving on to the solution.

The idea is to take 12:00 (h = 12, m = 0) as a reference. Following are detailed steps.

- 1) Calculate the angle made by hour hand with respect to 12:00 in h hours and m minutes.
- Calculate the angle made by minute hand with respect to 12:00 in h hours and m minutes.
- 3) The difference between two angles is the angle between two hands.

How to calculate the two angles with respect to 12:00?

The minute hand moves 360 degree in 60 minute(or 6 degree in one minute) and hour hand moves 360 degree in 12 hours(or 0.5 degree in 1 minute). In h hours and m minutes, the minute hand would move (h*60 + m)*6 and hour hand would move (h*60 + m)*0.5.

```
// C program to find angle between hour and minute hands
#include <stdio.h>
#include <stdlib.h>
// Utility function to find minimum of two integers
int min(int x, int y) { return (x < y)? x: y; }
int calcAngle(double h, double m)
{
    // validate the input
    if (h <0 || m < 0 || h >12 || m > 60)
    printf("Wrong input");
    if (h == 12) h = 0;
    if (m == 60) m = 0;
    // Calculate the angles moved by hour and minute hands
    // with reference to 12:00 int hour_angle = 0.5 * (h*60 + m);
    int minute_angle = 6*m;
    // Find the difference between two angles
    int angle = abs(hour_angle - minute_angle);
    // Return the smaller angle of two possible angles
    angle = min(360-angle, angle);
    return angle;
// Driver program to test above function
int main()
{
    printf("%d \n", calcAngle(9, 60));
printf("%d \n", calcAngle(3, 30));
    return 0;
```

Run on IDE

Output:

}

```
90
75
```