Conditionals

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Control Statements

- In C++ statements in a program are executed in sequential order (From top to bottom)

- This is called sequential execution.

- There are control statements that allow you to choose what code you want to run based on conditions.

- Those control statements are split into two categories : Selection statements and Repetition statements

- We will learn about Selection statements today

Selection statements : If statement

The if statement takes in a condition and based on that argument it decides whether to run the code in its block or not.

Example :

```
if (condition){
        //code
}
//code
```

Selection statements : If statement

- The code below the if statement executes if the condition is true or anything that is not 0 and skips if the condition is false or 0

- The condition can be a Boolean, a mathematical expression and anything that returns a value

- You can compare two values using comparison operators

Selection statements : If statement

Comparison operators in C++:

a == b: is a equal to b

a != b: is a not equal to b

a < b: is a less than b

a <= b: is a less than or equal to b

a > b: is a more than b

a >= b: is a more than or equal to b

Selection statements : If statement

Comparison operators example:

```cpp
if (a > b){
        cout << "a is greater than b" << endl;
}


if (a <= b){
        cout << "a is less than or equal to b" << endl;
}
```

Selection statements : else if statement

After using an if you can check for other conditions using and
else if :

```
if (a > b){
        cout << "a is greater than b" << endl;
}else if (a <= b){
        cout << "a is less than or equal to b" << endl;
}
```

Selection statements : else statement

If you don't want to test every other condition after an if statement you can use an else statement:

```cpp
if (a >= b){
        cout << "a is greater than or equal to b" << endl;
} else {
         cout << "a is less than b" << endl;
}
```

What is the output

```
int a = 10;
bool x = a % 2;
if (x)
    cout << "case 1" << endl;
else
    cout << "case 2" << endl;
```

What is the output

```
int test = 20 ;
if ( test  <= 10 )
{
    cout << "the condition was true" << endl ;
}else
{
    cout << "the condition was false" << endl ;
}
cout << "done" ;
```

What is the output

```
int age = 105;
if ( age < 100 ) {
        cout << "You are pretty young! \n";
  } else if ( age == 100 ) {
        cout << "You are old\n";
  } else {
     cout << "You are really old\n";
  }
```

Selection statements : if statement

Relational operators :

a **&&** b : if a and b are true it returns true

a **||** b : if a or b are true it returns true

Example :

```
int a = 100, b = 100;
if ( a == b && a > 5) {
        cout << "a and b are more than 5 and are equal" << endl;
  } else if ( a > 90 || b < 90) {
        cout << "a is more than 90 or b is less than 90"<< endl;
  }
```

What is the output

```cpp
int a = 10;
bool x = a % 2 || a > 3;
if (x)
    cout << "case 1" << endl;
else
    cout << "case 2" << endl;
```

What is the output

```
int a = 12;
bool x = a % 4 && a < 3;
if (x)
    cout << "case 1" << endl;
else
    cout << "case 2" << endl;
```

Problem 1:

Determine if kimo is lucky or not , print "lucky" if his age is even and print "unlucky" if his age is odd.

Problem 2:

You are given 4 numbers a,b,c and d. your task is to check whether you could get d number by using the arithmetic operators (+,−,×) between the other three numbers. Knowing that an operator can be used only once. Print "Yes" if you can get d or "No" if you can't

$$a \square b \square c = d$$

Problem 3:

You are given 3 random numbers a, b and c. Sort them in ascending order (smallest to largest).

Examples:

Input

3 2 1

Output

1 2 3

Problem 4:

One hot summer day Pete and his friend Billy decided to buy a watermelon. They chose the biggest and the ripest one, in their opinion. After that the watermelon was weighed, and the scales showed w kilos. They rushed home, dying of thirst, and decided to divide the berry, however they faced a hard problem.

Pete and Billy are great fans of even numbers, that's why they want to divide the watermelon in such a way that each of the two parts weighs even number of kilos, at the same time it is not obligatory that the parts are equal. The boys are extremely tired and want to start their meal as soon as possible, that's why you should help them and find out, if they can divide the watermelon in the way they want. For sure, each of them should get a part of positive weight.

Problem 5:

Our friend Zoma found a magical cave so he entered it. After he walked for several hours in the cave he found a magical door which opens if he said the right magical words, there was also a number X above the magical door.

He found a piece of paper near the magical door written on it :

"To open the magical door you should say X is "lucky" or "unlucky" also you should say X is "even" or "odd" ".

Zoma knows that the lucky numbers are the numbers which ends with 4 or 7, can you tell Zoma the magical words to help him open the magical door?

Input

12

Output

"unlucky even"

Problem 6:

Amr and his friends Waleed, Mustafa and Youssef just learned about problem solving and were training hard for the whole week.

One day they wanted to know who is the best in problem solving so they decided to solve a problem to decide who is the best and since they all worked hard they were all able to solve the problem so they decided that the winner will be the one who finished the problem in the least time.

Input

the input consists of 4 integers a, b, c and d ($0 \leq a, b, c, d \leq 1018$) the time taken by Amr, Waleed, Mustafa and Youssef to solve the problem.

Input

1 2 3 4

Output

"Amr"

Problem 7:

Serval, Fennec, and Raccoon played rock-paper-scissors and had a draw.

You are given characters x and y representing the hand thrown by Fennec and Raccoon, respectively. Here, 0 stands for rock, 1 stands for scissors, and 2 stands for paper.

Print the character corresponding to the hand thrown by Serval, which can be uniquely determined.

Input

0 1

Output

2

Problem 8:

Takahashi is playing a game.

In this game, each time the number of coins you have collected so far becomes a multiple of 100, you get a prize.

Takahashi has collected X coins so far. How many more coins does he need to collect before he gets the next prize? (If X is a multiple of 100, we assume that he has already got the prize for collecting X coins in total.)

Input

140

Output

60

Input

1000

Output

100