```
#include<stdio.h>
int main()
{
  int a=5, b=6, c=4, max;
  max = (a>b && a>c) ? (a) : ( (b>c) ? b : c );
printf("%d",max);
return 0;
}
```

output: 6

```
#include<stdio.h>
int main()
{
int i=(0,2,3);
printf("%d",i);
return 0;
}
```

output: 3

```
#include<stdio.h>
int main()
{
int i;
if (i=(2,1,0))
   printf("Hi");
else
   printf("Hello");
Printf("%d", i);
return 0;
}
```

output: hello 0

```
#include<stdlib.h>
int main()
{
int (i=0,2,3);
printf("%d",i);
return 0;
}
```

output: error

```
#include<stdio.h>
int main()
{
char a='A';
printf("%c",a);
return 0;
}
```

output: A

```
#include<stdio.h>
int main()
{
int i;
if (i=0,2,3)
   printf("Hi");
else
   printf("hello");
print("%d", i);
return 0;
}
```

output: Hi 0

```
#include<stdio.h>
int main()
{
int x=2;
switch(x){
  case 1: printf("hi");
  case 2: printf("hello");
  }
return 0;
}
```

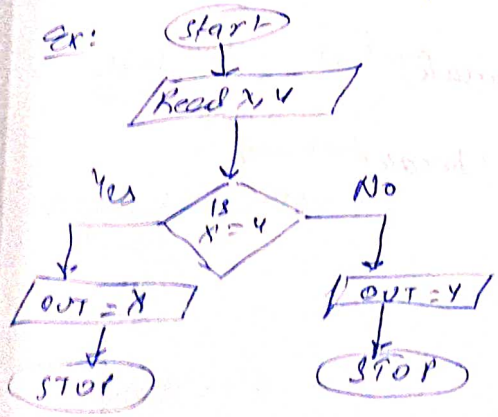
output: hello

FLOWCHART:

[ ] → computation [/] → Input/output ◇ → Decision Box

⬭ → Start/stop ⇩ → Flow of control ⬟ → connector

Ex:




```
#include<stdio.h>
int main()
{
int x=1;
switch(x){
 case 1: printf("hi");
 case 2: printf("hello");
 }
return 0;
}
```

output: hi hello

under switch syl...

```
#include<stdio.h>
int main()
{
int x = 2;
Switch (x) {
   case 1: printf("hi"); break;
   case 2: printf("hello"); break;
   default: printf ("others"); break;
}
return 0;
}
```

output: hello

```
#include<stdio.h>
int main()
{
char x = 'A';
switch (x)
 {
case 'A' : printf ("hi"); break;
case 'B' ; printf ("hello"); break;
default: printf ("others"); break;
}
return 0;
}
```

output: hi

```
#include<stdio.h>
int main()
{
int x = 1;
switch(x){
   case 1:
        printf ("hi");
        break;
   case 1:
        printf ("hello");
        break;
   default:
        printf ("others");
        break;
}
return 0;
}
```

output: error
duplicate case value

```
#include<stdio.h>
int main()
{
char x = 'A';
switch (x)
{
  case A : printf ("hi"); break;
  case B: printf ("hello"); break;
  default : printf ("others"); break;
}
return 0;
}
```

output: error

```
#include<stdio.h>
int main()
{
float x = 1.1;
 switch (x){
   case 1:
        printf ("hi");
        break;
   case 1.1:
        printf ("hello");
        break;
  default :
        printf ("others");
        break;
 }
return 0;
}
```

output: error
switch quantity not an integer

```
#include<stdio.h>
int main()
{
int x = 1;
switch (x+1) {
   Case 1 :
     printf ("hi"); break;
   case 2 :
     printf ("hello"); break;
   default:
     printf ("others"); break;
}
return 0;
}
```

output: hello

```
#include <stdio.h>
int main()
{
int x=1;
switch(x){
x=x+1;
   case 1:
        printf("hi"); break;
   case 2:
        printf("hello"); break;
   default:
        printf("others"); break;
}
return 0;
}
```

output: warning
↳ statement will never be executed (6 line)

hi

```
#include<stdio.h>
int main()
{
int x=1;
switch(x){
   case 2: printf("hi"); break;
   case 1+1: printf("hello"); break;
   default: printf("others"); break;
}
return 0;
}
```

output: error: duplicate case value

```
#include<stdio.h>
int main()
{
   while(1)
   printf("hi");
   return 0;
}
```

output: Infinite loop
'hi' will be printed

```
#include<stdio.h>
int main
{ int i=1;
  do
  {
  printf("hi");
  i=i+1;
} while(i<=2); return 0; }
```

output: hi hi

```
#include<stdio.h>
int main()
{
int x=1;
switch(x){
   case 1:
        printf("hi");
        x=x+1; break;
   case 2:
        printf("hello"); break;
   default: printf("others"); break;
}
return 0;
}
```

output: hi

```
#include<stdio.h>
int main()
{
A: printf("A");
goto C;
B: printf("B");
C: printf("C");
return 0;
}
```

output: A C

```
#include<stdio.h>
int main()
{
int i;
for(i=1;i<5)
printf("hi");
return 0;
}
```

output: Infinite time 'hi' will be printed.

```
#include<stdio.h>
int main()
{
int i=1;
while(i<=2)
{
printf("hi");
i=i+1;
}
return 0;
}
```

output: hi hi

```
#include<stdio.h>
int main()
{
int i=1;
for (i=1; i=<2, i=i+1)
{
  printf("hi")
}
return 0;
}
```

output: hi hi

```
#include<stdio.h>
int main()
{
 int i=1
for( ; ; )
  printf("hi")
return 0;
}
```

output: Infinite 'hi'

```
int main()
{
 int i=1;
for (i=1; i<=2; i=i+1);
    printf("hi");
    printf("hello");
return 0;
}
```

output: hi hi hello

(check code with & without semicolons after for condition)

```
#include<stdio.h>
int main()
{
  int a,max=0;
for(int i=1; i<=5; i++) {
  printf("Enter a number:");
  scanf("%d", &a);
  if(a>max)
  {  max=a;
  printf("%d",max);
return 0;
}
```

code to print maximum out of all inputted numbers

Decimal To Binary:

```
int b=0;
int i=0;
while(n!=0) {
  r=n%2;
  n=n/2;
  b=b+r*pow(10,i);
  i++;
 }
printf("%d", b);
```

* For binary to decimal,
just change the base to 10

Function is calling itself – self Recursion

$fib(n) = fib(n-1) + fib(n-2)$

$fib(1) = 1$

$fib(2) = 2$

fib(1)
X 1 2 3 5 8
fib(2)

Tower of Hanoi Problem

Scope of a variable.-

ARRAYS: Linear Data structure.

Syntax: int a[100]
- a → variable
- int → Data type.
- [100] → no. of elements

```
#include<stdio.h>
int main()
{
  int arr[2];
  arr[0]=5;
  arr[1]=6;
  printf("%d", arr[0]+arr[1]);
  return 0;
}
```

alternative way: int arr[2]={5,6}

output: 11

In arrays elements are linearly stored.

(Int takes 4 Bytes).

Size of array need to be pre-defined.

```
#include<stdio.h>
int main()
{
int a[5]={10,20,30,40,50};
int i=1;
printf("%d", a[i+2]);
return 0;
}
```

output = 40

```
#include<stdio.h>
#define size2
int main()
{
 int marks[size];
 int i;
 for(i=0; i<size; i++){
 printf("
```

```
#include<stdio.h>
int main()
{
  char name[5]={'R','A','M','B','O'}  (use '' for character not "")
  printf("%c",name[9]);
  return 0;
}
```

output: O

```
#include<stdio.h>
int main()
{
int flag[2]={0,1}; ≡ int flag={0,1}; (same meaning)
printf("%d",flag[1]);
return 0;
}
```

```
#include<stdio.h>
int main(),
{
  int flag[2];   ⟷ no error
  int flag[];    } These lines are not same
  return 0;      ⟷ error will arise (compilation error)
}
```

```
#include<stdio.h>
int main(),
{
  char name[] ={'R','A','M','B','O'};
  printf("%s",name);
  return 0;
}
```

⟵ String data type.

output: RAMBO

```
#include<stdio.h>
int main()
{
  int a[3];
  a[5]=89;
  return 0;
}
```

Code will be compiled

array bounds are not checked. here bound was 3 then also a[5]=89; did'nt gave us any error.

1. continuous memory location
2. Predefined size
3. Bounds are not checked

%d, %f, %s
These are format specifier.

```
#include<stdio.h>
int main()
{
  char c[3]={'R','A','M'};
   if (c[3]=='\0')
     printf("hi");
   return 0;
}
```

Terminating criteria for any string is '\0'

```
int main()
{
  char c[6]={'R','A','M','\0','B','O'}
   printf("%.s",c);
}
```

output: RAM

```
int main()
{
  char c[3]={'R','A','M'};
  int i;
  for(i=0; c[i]!='\0'; i++)
   printf("%d",i);
   return 0;
}
```

output: 3

```
int main()
{ int a[5]={2,-5,10,8,7};
  int i,j, temp, n=5;
  for (i=0; i<n-1; i++){
     for (j=0; j<n-1; j++){
        if (a[j+1]<a[j]){
          temp=a[j+1];
          a[j+1]=a[j];
          a[j]=temp;
          } // end of if loop
        } // end of for loop
     } // end of outer for loop
} End of Program
  for (i=0; i<n; i++){
     printf("%d",a[i]);
  }
return;
}
```

Bubble sorting
↓
for loop is used
for n-1 times.

Time complexicity for Bubble sort = n^2 (without flag)

with flag → Time complexity is reduced.