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Control flow statements - Part II

Comprehensive Course on C- Programming

Pankaj Sharma • Lesson 9 • May 10, 2024

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CS & IT Engineering

C Programming

Control Flow statements-II

Lecture - 09

By- Pankaj Sir

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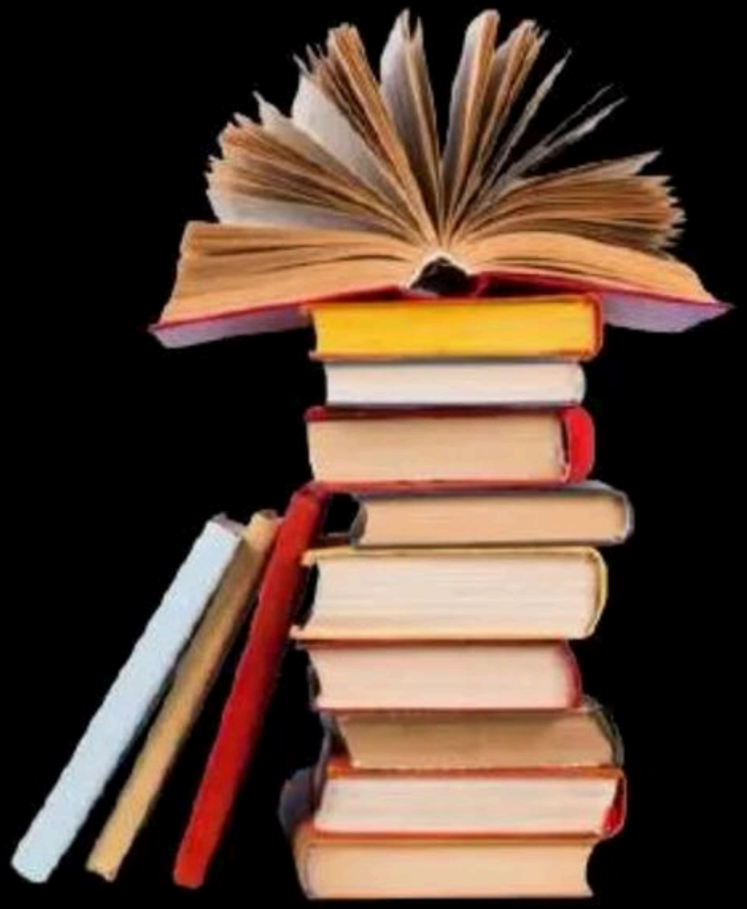
Topics

to be covered



1. Iterative statements part -I

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Iterative statements (Repetition)

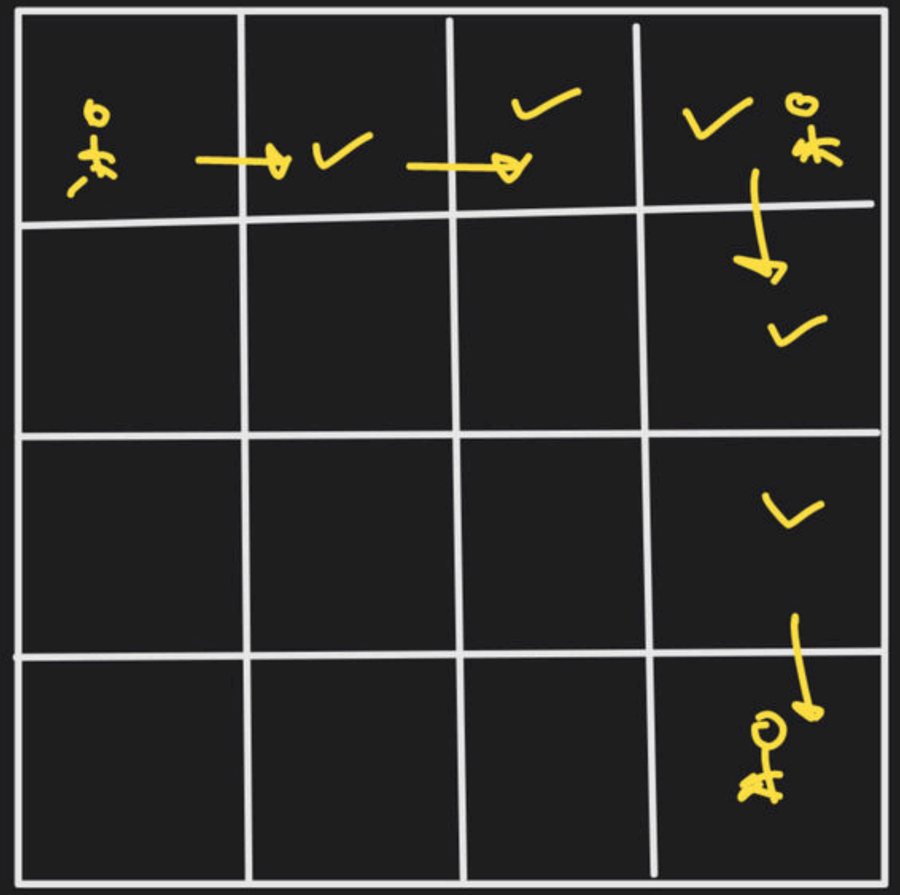
1st way

Go Right
Go Right
Go Right
Go down
Go down
Go down

⇒

Go Right 3 times
Go down 3 times

Right →
down ↓



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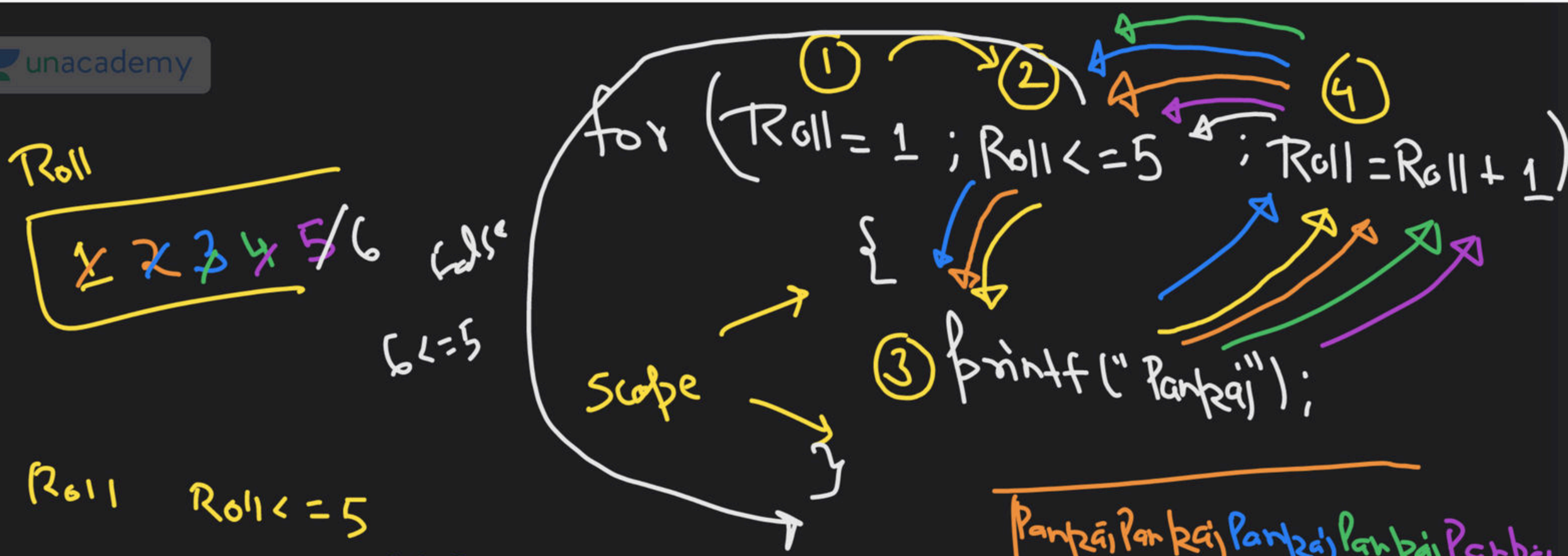
print my name - 100 times

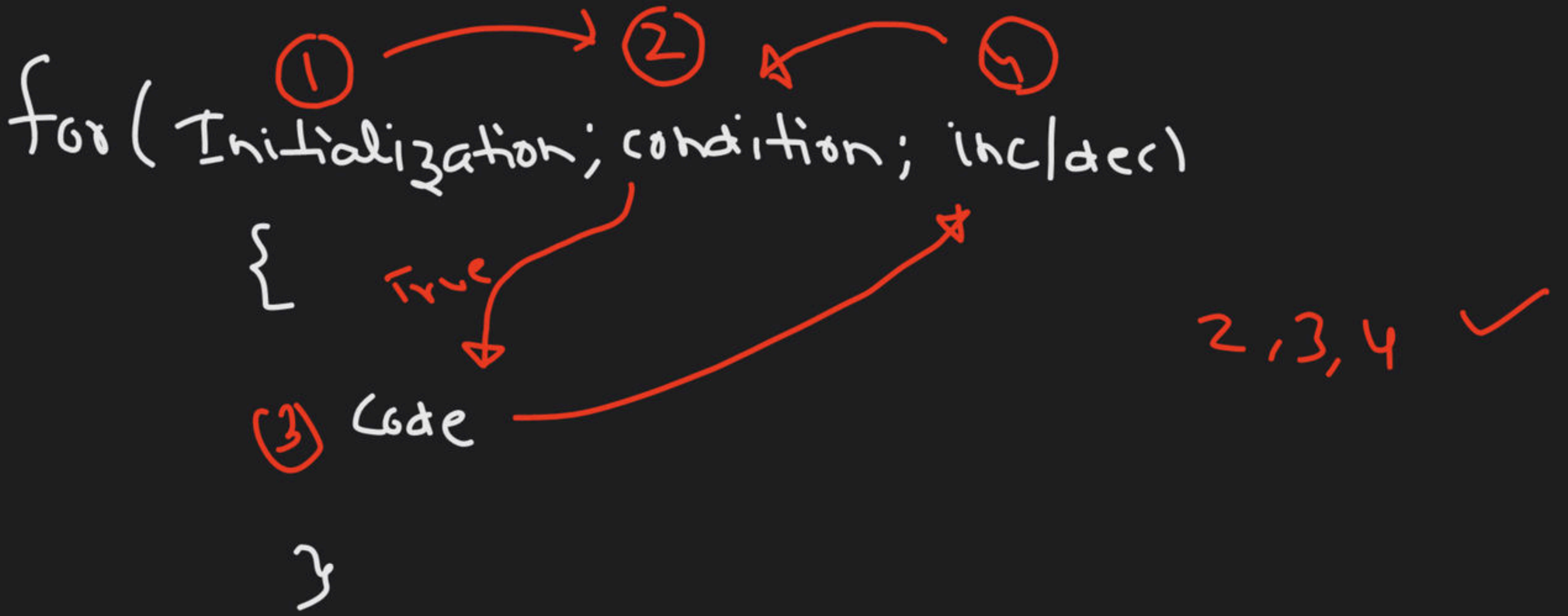
↳ loops → for
→ while
→ do while

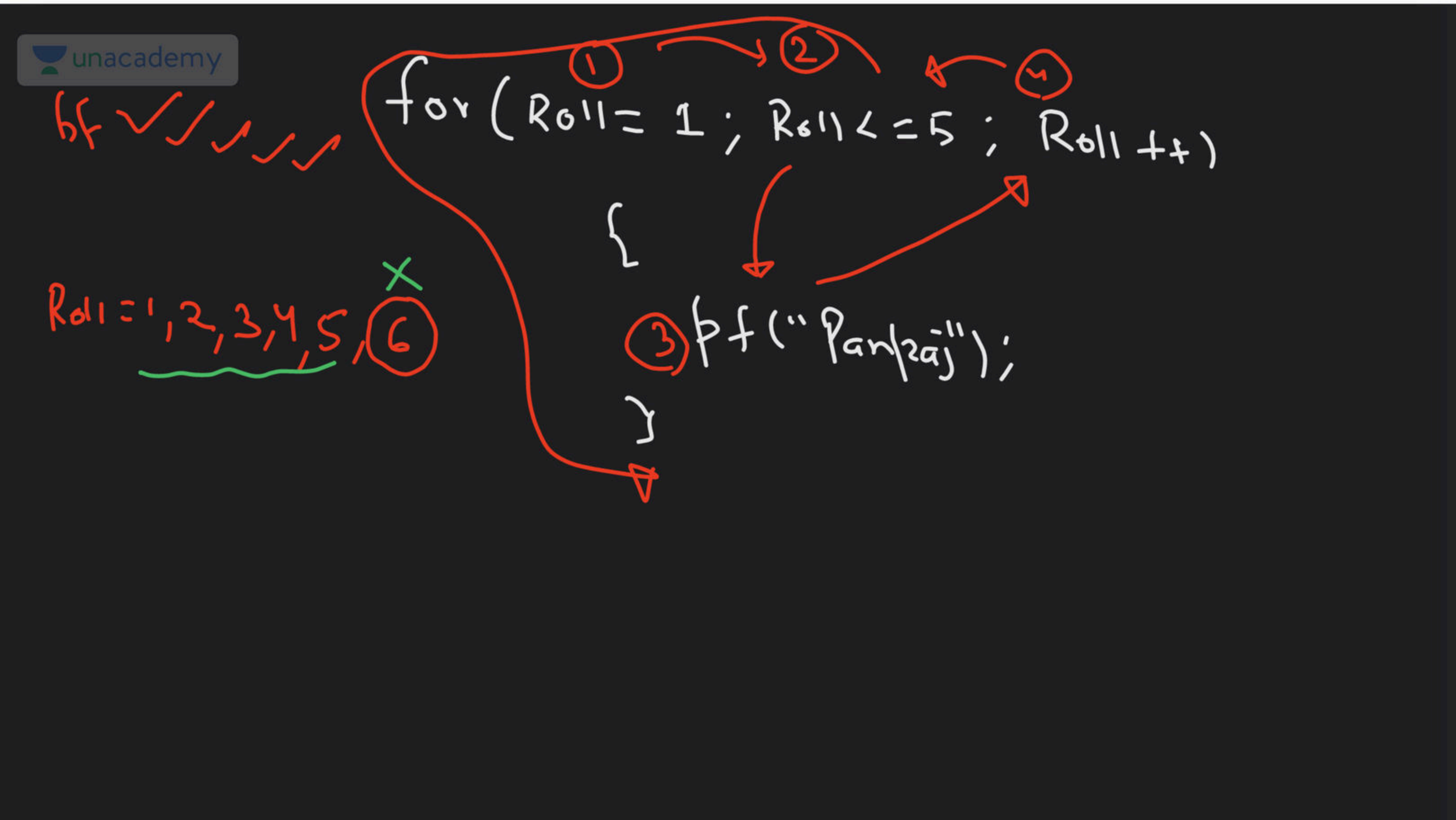
```
for (Roll = 1 ; Roll <= 5 ; Roll = Roll + 1)
    {
        printf("Pankaj");
    }
```



Roll	Roll <= 5				
1	1 <= 5	True	bf	execute	⇒ Pankaj
2	2 <= 5	True	bf	execute	⇒ Pankaj
3	3 <= 5	True	bf	"	⇒ Pankaj
4	4 <= 5	True	bf	"	⇒ Pankaj
5	5 <= 5	True	bf	"	⇒ Pankaj
6	6 <= 5	False	bf		

PankajPankajPankajPankajPankaj

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bf
for (Roll = 1 ; Roll <= 5 ; Roll ++)
{
pf ("Pankaj");
}
Roll = 1, 2, 3, 4, 5, 6
1
2
3
4

```
for(Roll = 6 ; Roll <= 10; Roll++)
{
    printf("Pankaj");
}
```

will execute

Roll = 6, 7, 8, 9, 10

5 times

Roll	
6	6 <= 10 → True → Pankaj
7	7 <= 10 → True → Pankaj
8	8 <= 10 →
9	9 <= 10 →

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```
for(Roll=1; Roll<=5; Roll++)
{
  Code
}
```

Roll = 1 ⇒ Code will execute

Roll = 2 ⇒ "

Roll = 3 ⇒ "

Roll = 4 ⇒ "

Roll = 5 ⇒ "

```
for(Roll=-1; Roll<=3; Roll++)
{
  Code
}
```

Roll = -1, 0, 1, 2, 3

↳ 5 times

```
for(i=1; i<=10; i++)
{
    printf("Pankaj");
}
```

(1) (2) (4) (3)

scope

i	
1	1<=10 → True ✓
2	2<=10 → True ✓
3	3<=10 → True ✓
4	.
5	.
6	
7	
8	
9	
10	10<=10 → True ✓
11	11<=10 → False

Q1

```
for ( i = 0; i > 6; i++)
{
    printf (" Pankaj");
}
```

① → ②

False

i	
0	0 > 6 → False

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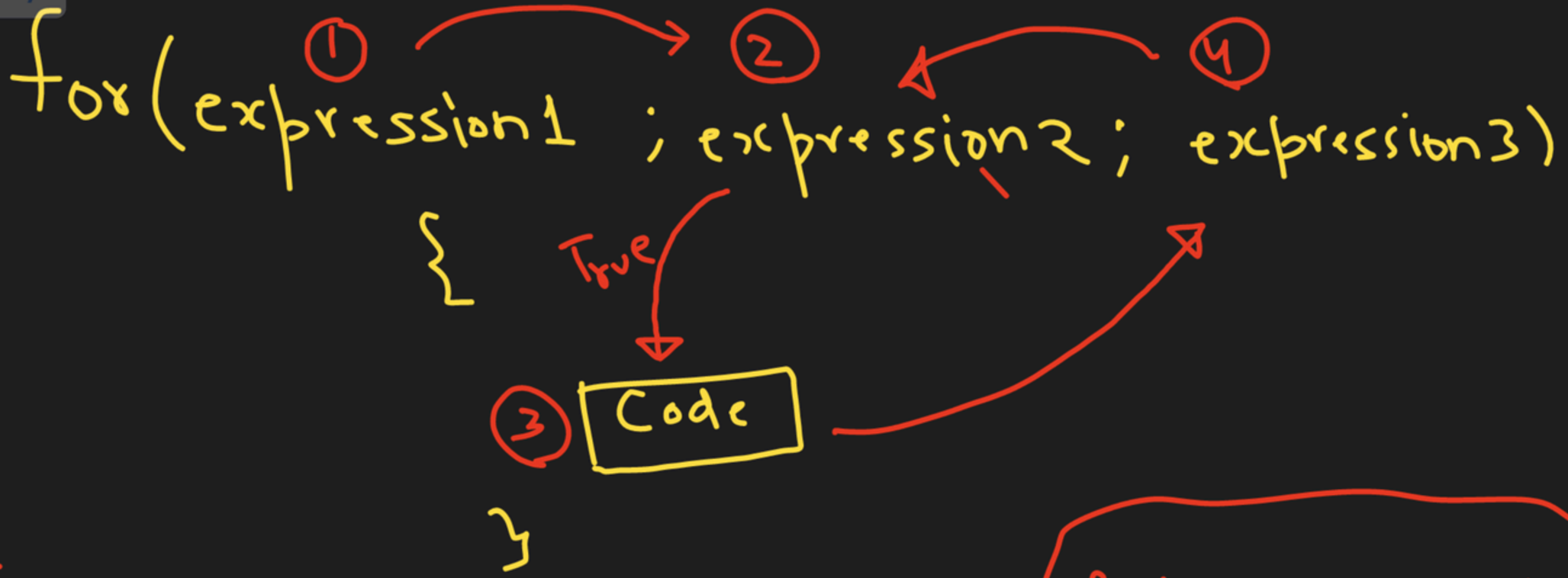
Q/

```
for(i=10; i<=100; i++)
    {
      printf("Hello");
    }
```

$i = 10, 11, \ldots 100 \Rightarrow 100 - 10 + 1 \Rightarrow 91$

$= (91)$ times

Hello print Hoga.



iteration

exp1 → 1 time

exp2 —True→ Code → exp3

exp2, Code, exp3

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Q1

```
#include<stdio.h>
void main() {
    int i = 1;
    for( ① ; i<=3 ; 13)
    {
        pf("Pankaj");
        i = i+2;
    }
}
```

i | 1

Is it an expression

Scope

code

Q1

```
#include<stdio.h>
void main() {
    int i = 1;
    for( ① ; i<=3 ; ④ )
    {
        ③ pf("Pankaj");
        i = i+2;
    }
}
```

i: 1 3 5

5<=3 false

Is it an expression ✓

1<=3 → True → Code
a) pf ✓
b) i = 1+2 = 3

3<=3 → Code
a) pf ✓
b) i = 3+2 = 5

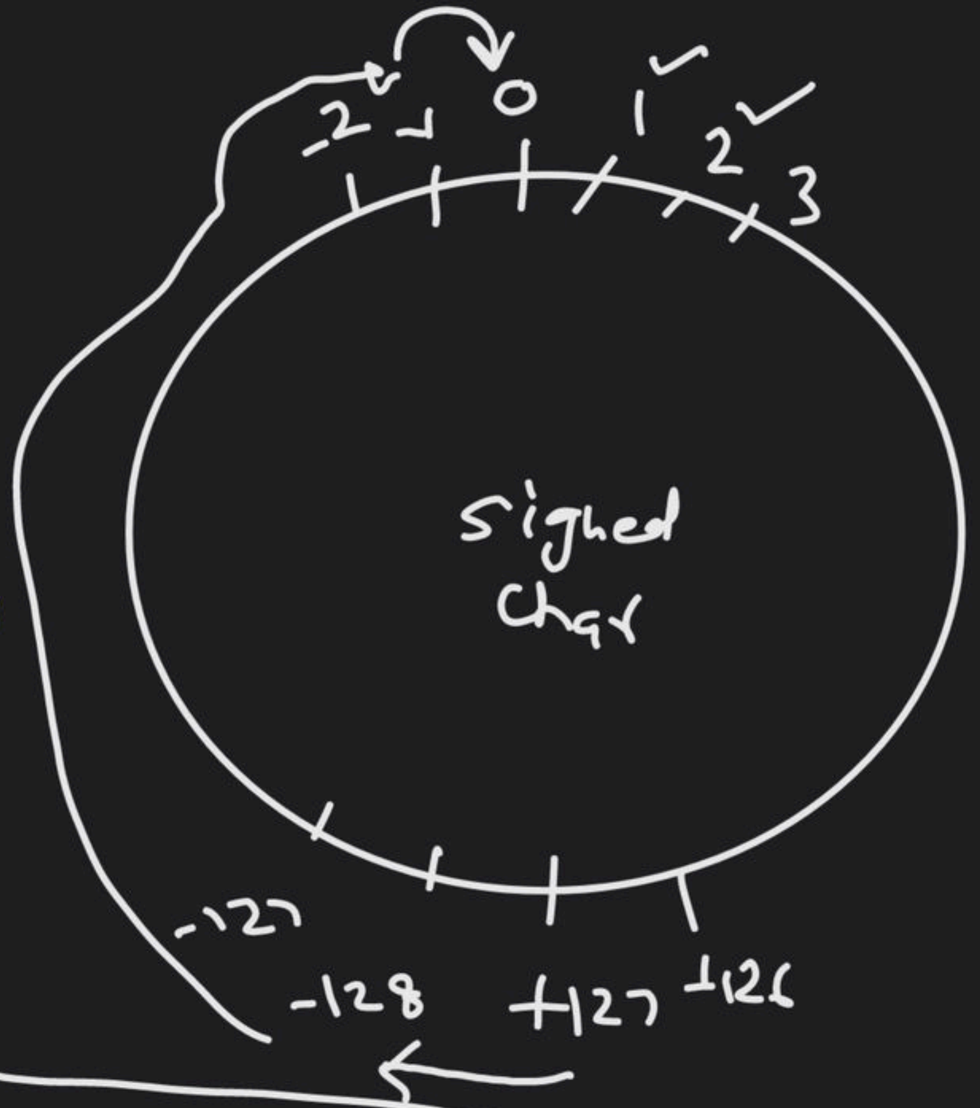
Code

Scope

false

```
void main(){
    char ch;
    for(ch=1; ch; ch++)
        printf("Pankaj");
    printf("END");
}
```

by default signed



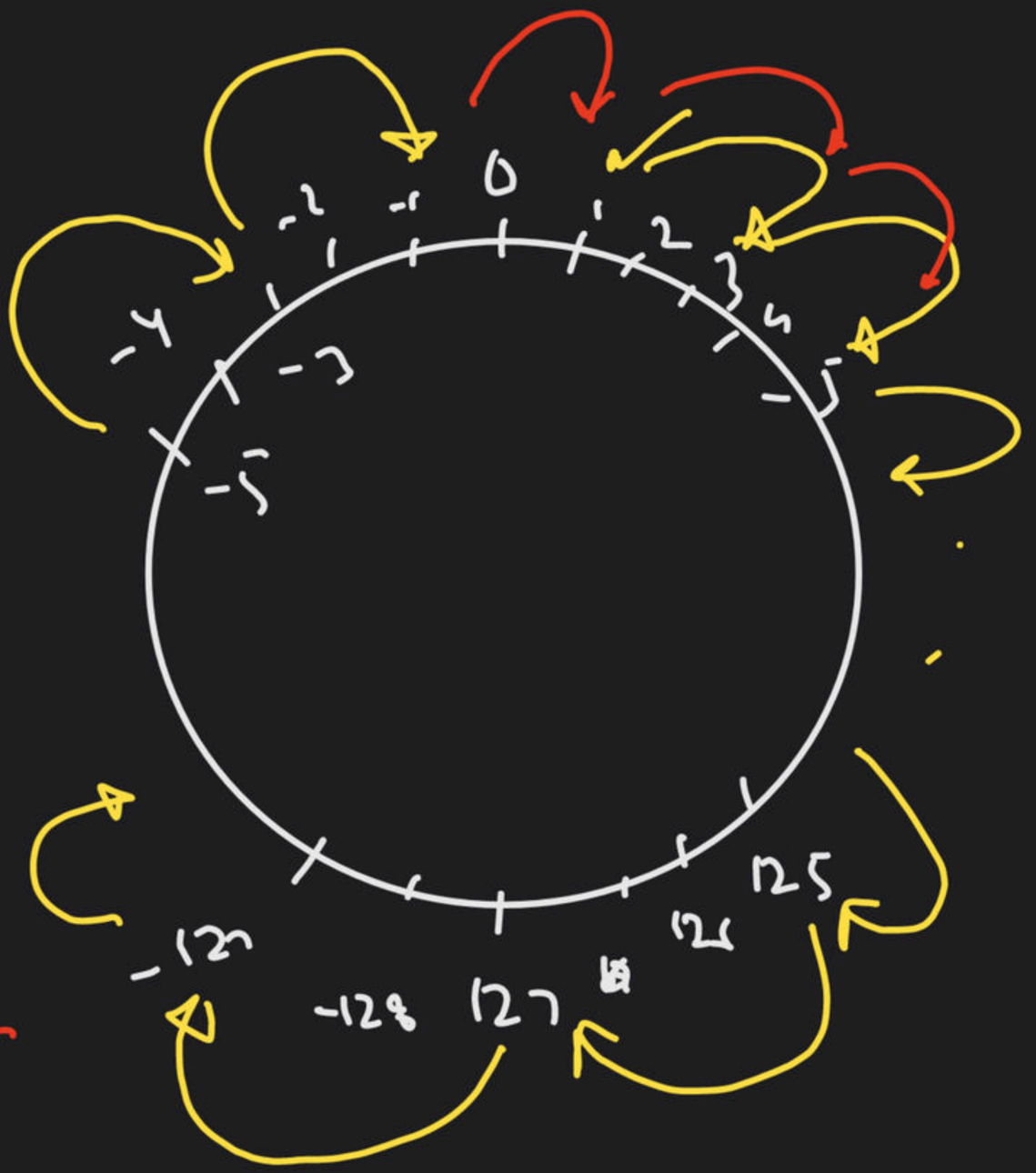
ch = 1, 2, 3, ... 127, -128, -127, ... -1

255 times Pankaj then END

(2) #

```
Void main(){
  char ch;
  for(ch=1; ch; ch=(ch+2)
      printf("Pankaj");
  }
```

Infinite times



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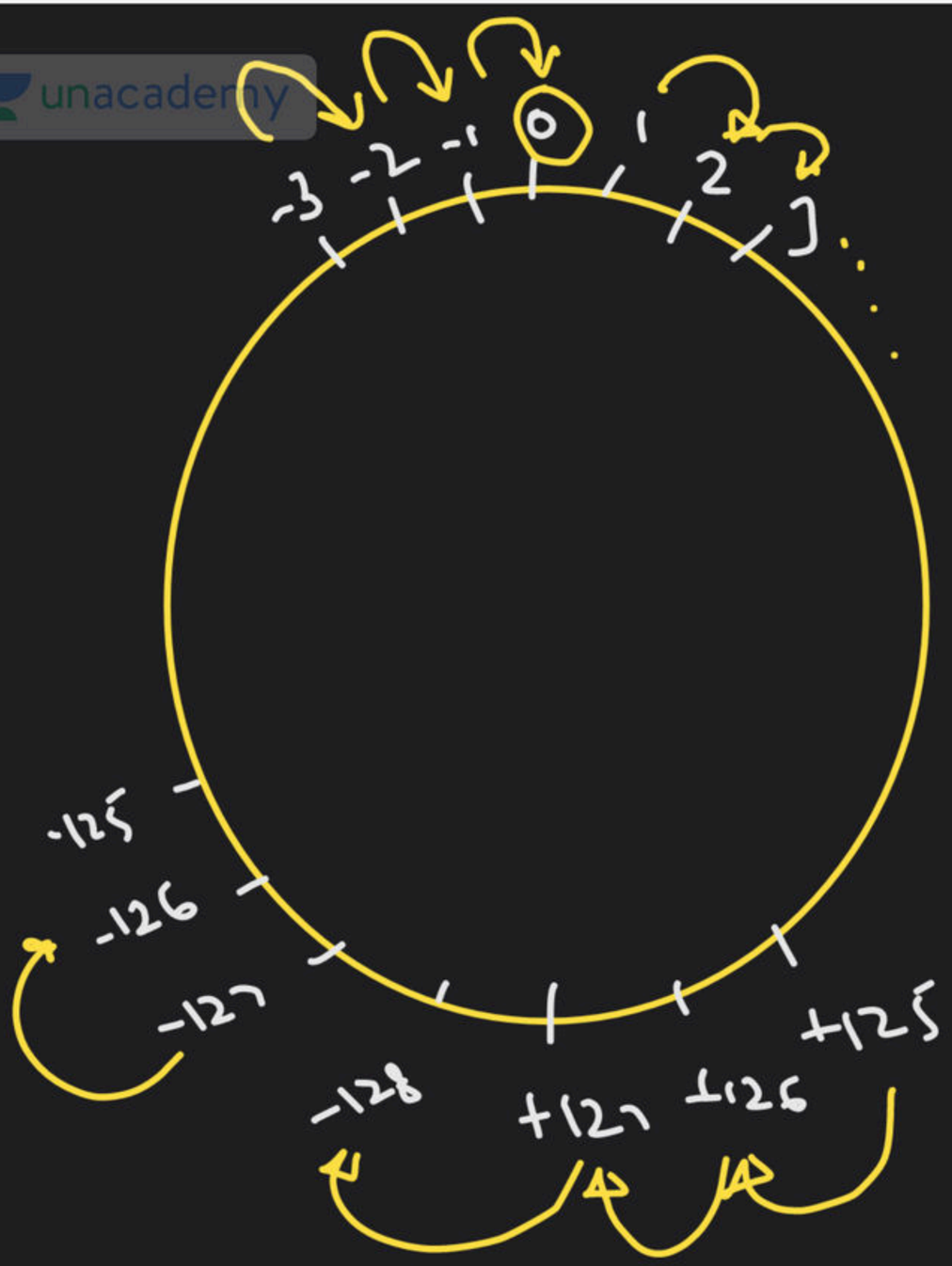
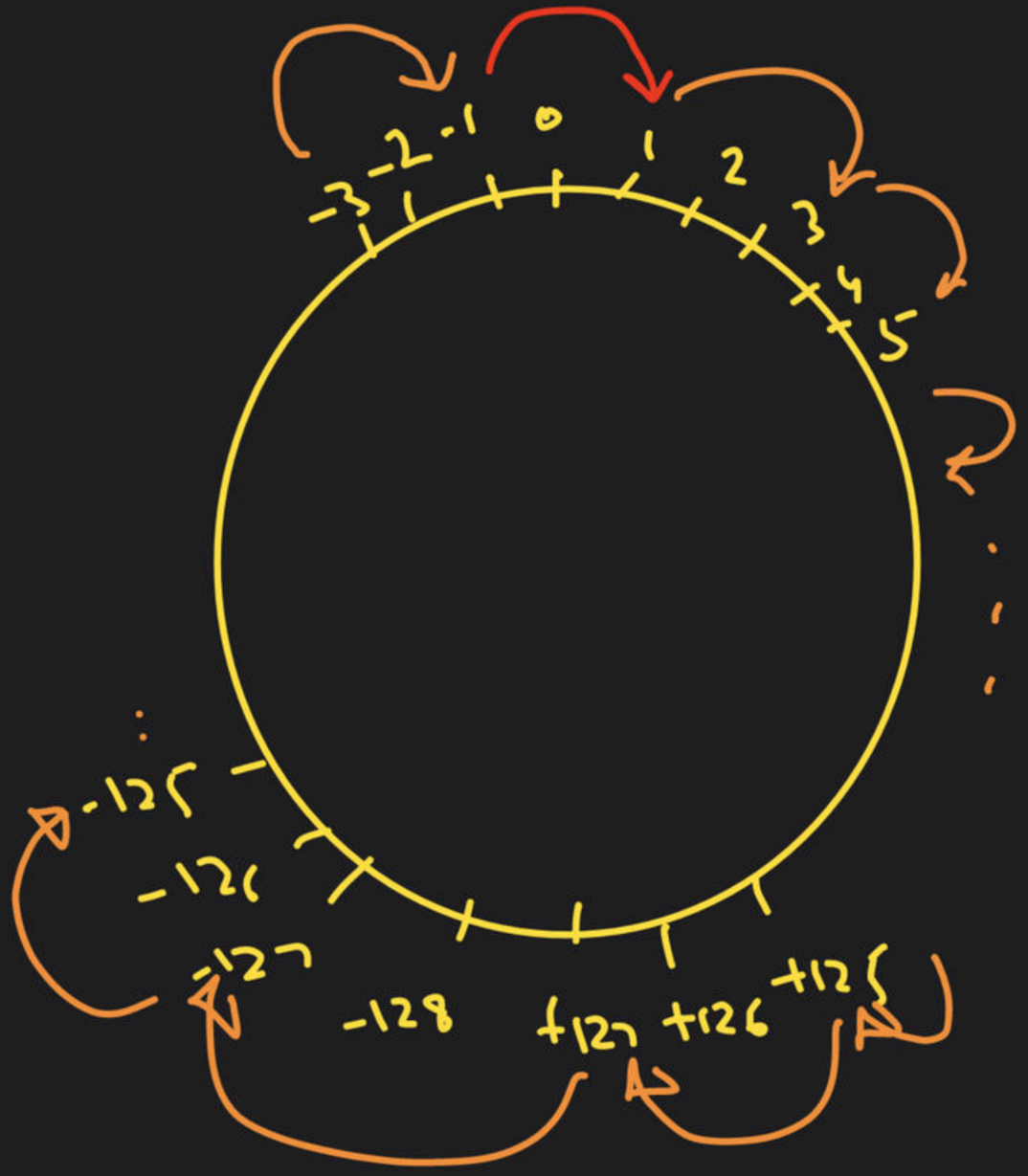
```
for (ch=1; ch; ch = ch+2)
{
=
}
```

ch;

1;

ch	1


-3
-2
-1
0
1
2
3
-125
-126
-127
-128
+127
+126
+125


-3
-2
-1
0
1
2
3
4
5
-128
+127
+126

Q. int i = 1;

```
for ( printf("1"); i<=5; printf("3"))
{
    printf("2");
    i++;
}
```

① → ② → ③ → ④ → ② → ③ → ④ → ② → ③ → ④ → ② → ③ → ④ → ② → ③ → ④ → ②

i: 1 2 3 4 5 6

1 2 3 2 3 2 3 2 3 2 3

i) Code
ii) Code

1<=5 ✓ Code
printf("1")

2<=5 ✓ i) Code
i) printf("2")
ii) i=2
bf("3")

3<=5 ✓ i) Code
i) printf("2")
ii) i=3
bf("3")

4<=5
i) Code printf("2")
bf(3)

5<=5
i) Code printf("2")
bf(3)

6<=5
↓
false

bf(3)

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```
for ( bf("1") ; ; bf("3"))
{
    bf("2");
    i++;
}
```

1)

```
for(1 ; 2 ; 3)
{
    printf("Pankaj");
}
```

∞ times Pankaj

2)

```
for(0 ; 1 ; 0)
{
    printf("Pankaj");
}
```

∞ times

3.

```
for(1; 0; 10)
  {
   printf("Pankaj");
  }
```

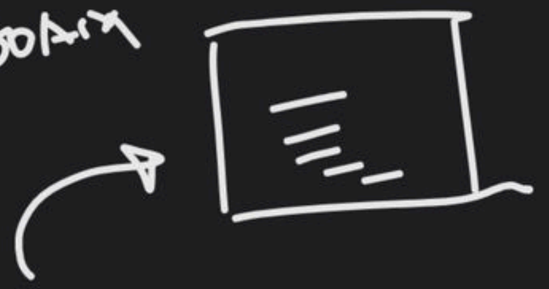
No o/p

SDE - II

→ Module

Code → 15

11:00AM



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All 3 Expressions are optional.

```
for( i =1; i<=4; i++)
    {
    printf("Pankaj");
    }
```

⟹

```
i = 1;
for(   ; i<=4; i++)
    {
    printf("Pankaj");
    }
```

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```
for(i=1;i<=4;i++)
  {
  printf("Pankaj");
  }
```

```
i=1;
for(   ;i<=4;   )
  {
  printf("Pankaj");
  i++;
  }
```

optional

exp2 ⇒ omit

by default ⇒ True

```
for(i=1;      ;i++)
    {
        printf("Pankaj");
    }
```

∞ times

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```
for( ; ; ){
    printf("Pankaj");
}
```

∞ times

1:

```
int i = -1;
for( i++ ; i++ ; i++)
{
printf("Pankaj");
}
```

-1 → 0

i++ → (i) use value
(ii) update

No output

Q/ `int i = -1;`

1, 3, 5, 7, 9, ...

```
for( i++ ; ++i ; i++ )
{
    printf("Pankaj");
}
```

-1 ; 0, 1, 2, 3 ; 1

⇒ ∞ times

Q- char i = -1;

1, 3, 5, 7, 9, ...

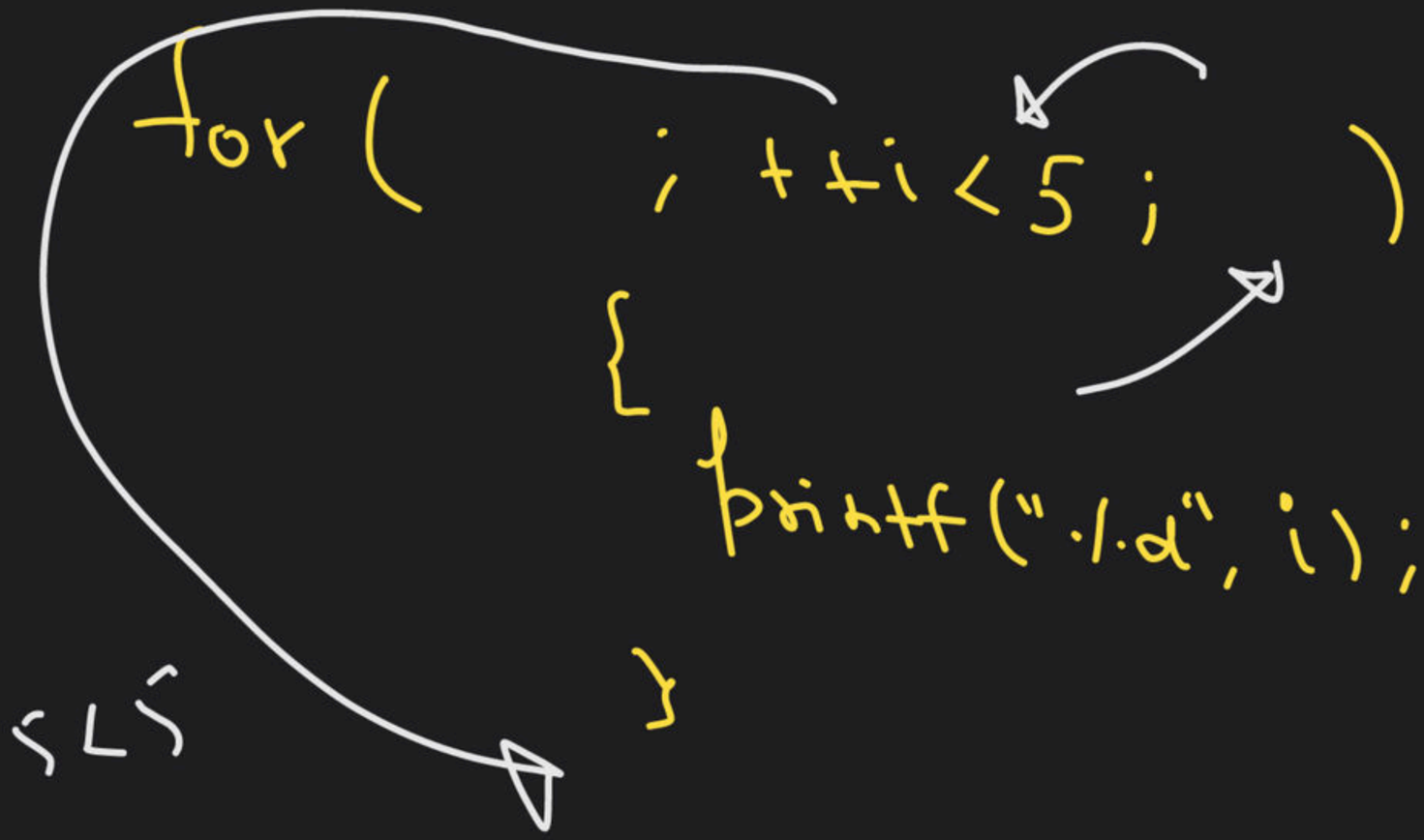
```
for( i++ ; ++i ; ++i )
    {
    printf("Pankaj");
    }
```

-1 → 0 → 1, 3, 5 → 2M

∞ times

Q/ int i = 1;

i | 1 2 3 4 5 |



2 < 5 ✓ → bf 2
3 < 5 ✓ → bf 3
4 < 5 ✓ → bf 4
5 < 5 → false

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Q1

```
int i=1;
for(   ; i++<5 ;   )
{
printf("%d",i);
}
```

(i) i<5

(ii) i=i+1

i | 1 2 3 4 5

1<5 ✓ 4<5 ✓

2<5 ✓ 5<5 ✗

3<5 ✓

2 3 4 5

bf(2)

bf(3) bf(4) bf(5)

1.
```
for(i=1; i<=10; i+1)
    printf("Pankaj");
```
10 times (i = 1, 2, ... 10) 10 - Yes

2. n >= 1
```
for(i=1; i<=n; i++)
    printf("Pankaj");
```
Ans n times

3.
```
for(i=1; i<=10; i=i+2)
    printf("Pankaj");
```
i = 1 ✓
i = 3 ✓
i = 5 ✓
i = 7 ✓
i = 9 ✓
} 5 times

i = 11 ⇒ 11 <= 10 → false X

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[for loop → Analysis] →

1, 2, - -

100, - - 200 ⇒ 200 - 100 + 1

⇒ 101

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THANK YOU!

Here’s to a cracking journey ahead!