



Recursion

algorithms365  
Performance with purpose

RECURSION

masai.

RECURSION

◀ ▶ ⋮

## Recursion

## ① Functions.

<returntype> functionName (arguments)

int getSum (int num1, int num2)

{

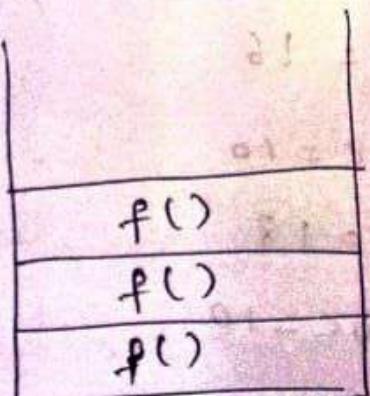
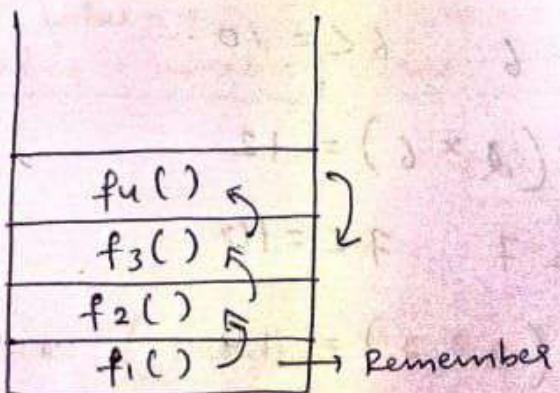
    int sum = 0;

    sum = num1 + num2

    return sum;

}

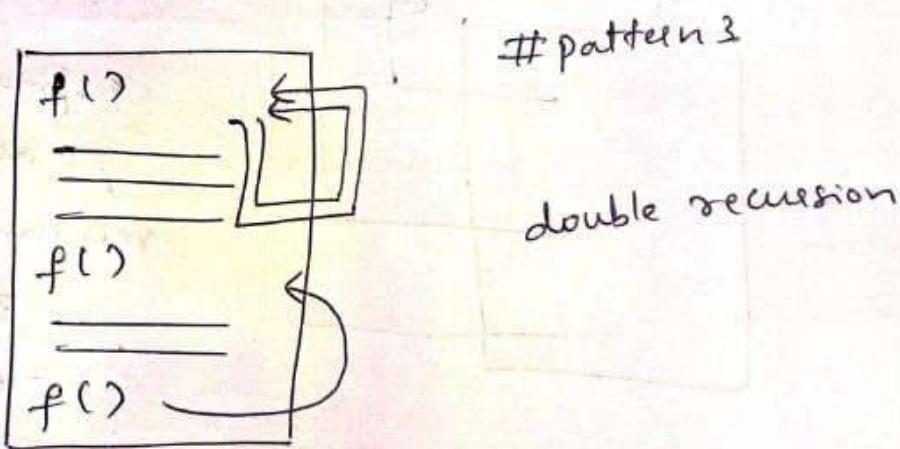
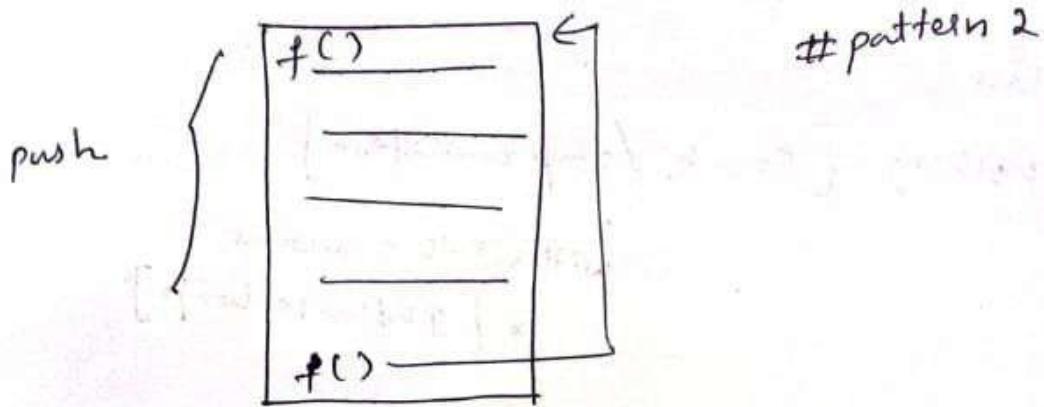
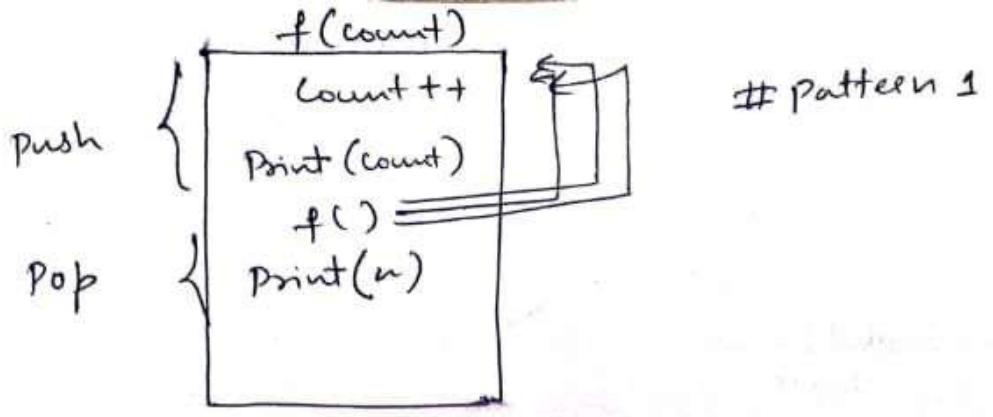
## ② Stack Memory



(→)

Same function it  
is calling itself

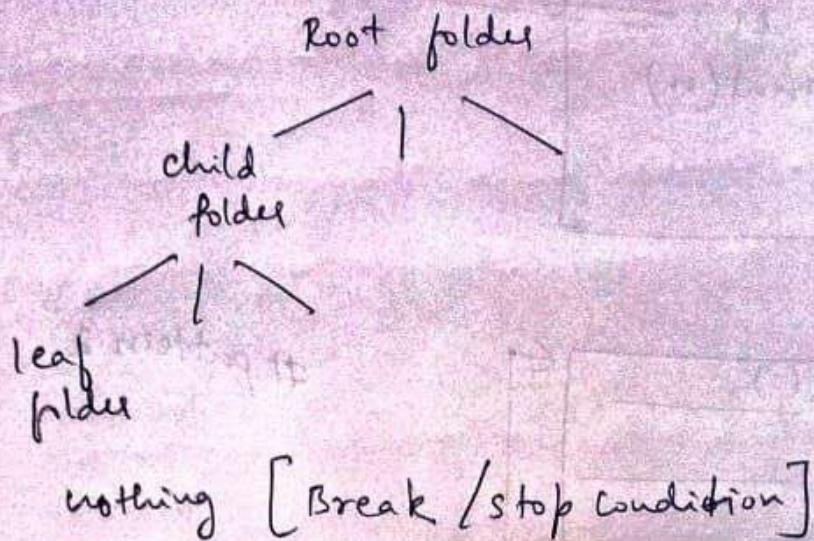
Called Recursion



- ③ why and where recursion is used
  - (a) Folder structure
  - (b) Family tree
- ④ Important techniques to write recursive code
  - \* Saves time

## ⑤ Common pitfalls of recursion

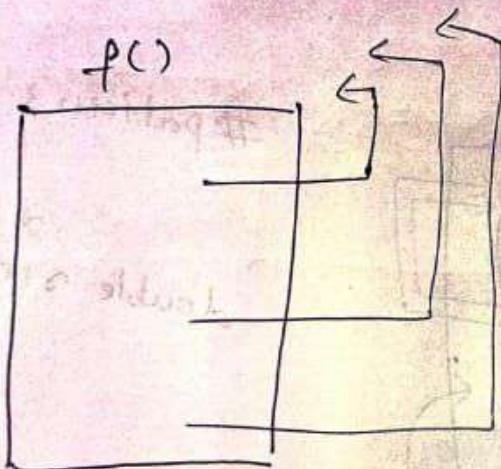
⇒



without this means

\* [Infinite loop]

⇒



\* from where  
you are calling  
recursive function

- Beginning
- middle
- ending

⇒ Before you call the function recursively what is the code you write and after the recursion what you write.

⇒ will you call it one time or multiple times

Day16 > Recursion.java > ...

```
1 public class Recursion {
2     public static void increment_and_print(int counter){
3
4         if (counter >= 10){ //the break or stop condition
5             is mentioned here
6             return;
7         }
8         counter = counter + 1;
9         System.out.print(counter + " ");
10        increment_and_print(counter);
11    }
12
13    Run | Debug
14    public static void main(String[] args) {
15        increment_and_print(counter:0);
16    }
17 }
```

PROBLEMS OUTPUT TERMINAL ...

Run: Recursion + × ☒

```
PS C:\Users\ANANYA\OneDrive\Desktop\Algorithm365> & 'C:\Program Files\Eclipse Adoptium\jdk-21.0.6.7-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\ANANYA\AppData\Roaming\Code\User\workspaceStorage\015634db8fc5f9a2b840f9e82f267996\redhat.java\jdt_ws\Algorithm365_c0509dd3\bin' 'Recursion'
```

```
1 2 3 4 5 6 7 8 9 10
```

```
PS C:\Users\ANANYA\OneDrive\Desktop\Algorithm365>
```

Day16 > Recursion.java > Recursion

```
1 public class Recursion {  
2     public static void increment_and_print(int counter){  
3  
4         counter = counter + 1;  
5         System.out.print(counter + " ");  
6  
7         increment_and_print(counter);  
8  
9     if (counter >= 10){ //the break or stop condition  
10        is mentioned here  
11        return; //continues loop  
12    }  
13 }  
14 public static void main(String[] args) {  
15     increment_and_print(counter:0);  
16 }  
17 }
```

PROBLEMS OUTPUT TERMINAL ... Run: Recursion + × ☰

```
at Recursion.increment_and_print(Recursion.java:7)  
at Recursion.increment_and_print(Recursion.java:7)
```

PS C:\Users\ANANYA\OneDrive\Desktop\Algorithm365>

Day16 >  Recursion.java >  Recursion

```
1 public class Recursion {
2     public static void increment_and_print(int counter){
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6             return;
7         }
8         counter = counter + 1;
9
10        increment_and_print(counter);
11
12        System.out.print(counter + " ");
13    }
14
15    public static void main(String[] args) {
16        increment_and_print(counter:0);
17    }
18 }
```

PROBLEMS      OUTPUT      TERMINAL      ...

Run: Recursion + v || ⌫ ... | ⌚ ×

```
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```

10 9 8 7 6 5 4 3 2 1

PS C:\Users\ANANYA\OneDrive\Desktop\Algorithm365>

Day16 > Recursion.java > Recursion

```
1  public class Recursion {  
2      public static void increment_and_print(int counter){  
3  
4          if (counter >= 10){ //the break or stop condition is mentioned  
5              here  
6              return;  
7          }  
8          counter = counter + 1;  
9  
10         System.out.print(counter + " "); //The print statement is  
11         written here  
12  
13         increment_and_print(counter);  
14  
15     }  
16     Run | Debug  
17     public static void main(String[] args) {  
18         increment_and_print(counter:0);  
19     }  
20 }
```

PROBLEMS    OUTPUT    TERMINAL    ...

Run: Recursion + ▾ □ ✖ ... | [ ] ×

```
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```

```
1 2 3 4 5 6 7 8 9 10 10 9 8 7 6 5 4 3 2 1
```

```
PS C:\Users\ANANYA\OneDrive\Desktop\Algorithm365>
```