↳ **String** :- collection of character surrounded with double quotes.

e.g., str = "AbcDe"
0 1 2 3 4

functions:-

- ↳ str.charAt(idx) :- character at index idx
- ↳ str.length() :- size of string //5
- ↳ str.toLowerCase() :- to change charactors to lower case //abcde
- ↳ str.toUpperCase() :- to change charactors to upper case //ABCDE
- ↳ str.substring(start_idx, end_idx) :- start index is inclusive, end idx is exclusive [si, ei)
  (start_idx: int, end_idx: int)

e.g., "axbd"

substring

a	x	b	d
ax	xb	bd	
axb	xbd		
axbd			

↳ str.substring(start_idx);
(start_idx: int)

e.g., str = "geekster"
0 1 2 3 4 5 6 7

str.substring(2, 4) //"ek"
str.substring(1, 5) //"eeks"
str.substring(3, 8) //"kster"
str.substring(0, 8) //"geekster"
str.substring(4) //"ster"
str.substring(1) //"eekster"
str.substring(3,3) //""
str.substring(2, 9) //error

```java
public static void main(String[] args) {
    String str = "geekster";
    String ans = str.substring(2, 4);
    System.out.println(ans);

    String ans1 = str.substring(1, 5);
    System.out.println(ans1);

    String ans2 = str.substring(3, 8);
    System.out.println(ans2);

    String ans3 = str.substring(0, 8);
    System.out.println(ans3);

    String ans5 = str.substring(3, 3);
    System.out.println(ans5);

    String ans4 = str.substring(1);
    System.out.println(ans4);

    String ans6 = str.substring(2, 9);
    System.out.println(ans6);
}
```

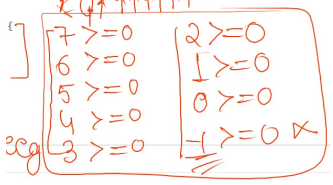
```
ek
eeks
kster
geekster

eekster

java.lang.StringIndexOutOfBoundsException: begin 2, end 9, length 8
  at line 4601, java.base/java.lang.String.checkBoundsBeginEnd
  at line 2704, java.base/java.lang.String.substring
  at line 23, Main.main
```

non-return type fn

```
public static void solve(String str) {

    for (int i = str.length() - 1; i >= 0; i--) {

        char ch = str.charAt(i);
        System.out.print( ch );

    }

}
```

i = 0 1 2 3 4 5 6 7

1 geekster



eg

---

return type fn

```
public static void main(String[] args) {
    /* Enter your code here. Read input from STDIN
    Scanner scn = new Scanner(System.in);
    String str = scn.nextLine();

    String ans = solve(str);

    System.out.println(ans);
}

public static String solve(String str) {
    String ans = "";    // empty string

    for (int i = str.length() - 1; i >= 0; i--) {
        char ch = str.charAt(i);
        ans = ans + ch;
    }

    return ans;
}
```

str = "geekster"

ans = ""

ans = "r";
ans = "re";
ans = "ret";
ans = "rets";
ans = "retsk";
ans = "retske";
ans = "retskee";
ans = "retskeeg";

Ques Running Sum

que =	3	4	5	6	8	10
ans =	3	7	12	18	26	36

ans = 3

Syso(ans);

```
1)  public static void main(String[] args) {
2)      Scanner scn = new Scanner(System.in);
3)      int n = scn.nextInt();
4)
5)      int ans = 0;
6)      while (n-- > 0) {
7)          int num = scn.nextInt();
8)
9)          ans = ans + num;
10)         System.out.print(ans + " ");
        }
    }
```

⇒ Fibbonacci series

n=8

1 2 3 4 5 6 7 8 9 . .

1, 1, 2, 3, 5, 8, 13, 21, 34, ...

0 1 2

F(n) = F(n-1) + F(n-2),
Where, F(1) = F(2) = 1

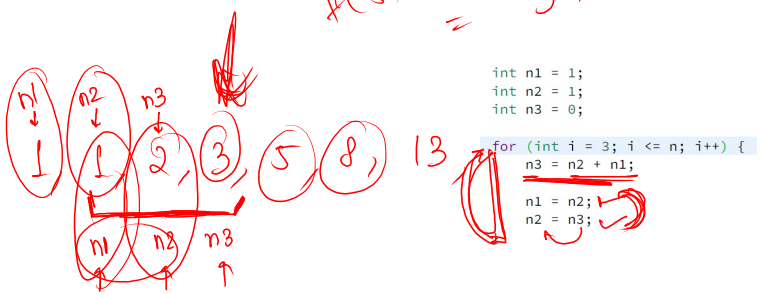
psudo code

n = 3

f(3) = f(2) + f(1)
= 1 + 1
= 2

f(4) = f(3) + f(2)
= 2 + 1 = 3

f(5) = f(4) + f(3)
= 3 + 2 = 5




```
int n1 = 1;
int n2 = 1;
int n3 = 0;
for (int i = 3; i <= n; i++) {
    n3 = n2 + n1;
    n1 = n2;
    n2 = n3;
}
```

```
if (n == 1) {
    System.out.print(1);
}
else if (n == 2) {
    System.out.print(1);
}
else {

    int n1 = 1;
    int n2 = 1;
    int n3 = 0;

    for (int i = 3; i <= n; i++) {
        n3 = n2 + n1;

        n1 = n2;
        n2 = n3;
    }

    System.out.print(n3);
}
```

n = 1 , 1 and

n = 2 , 1

n = 3 , (sum)

n1 = 1, n2 = 1, n3 = 0

i = 3, n3 = 2, n1 = 1, n2 = 2

i = 4, n3 = 3, n1 = 2, n2 = 3

i = 5, n3 = 5, n1 = 3, n2 = 5

i = 6, n3 = 8, n1 = 5, n2 = 8

i = 7, n3 = 13, n1 = 8, n2 = 13

i = 8, n3 = 21, n1 = 13, n2 = 21

i = 9, n3 = 34, n1 = 21, n2 = 34

S