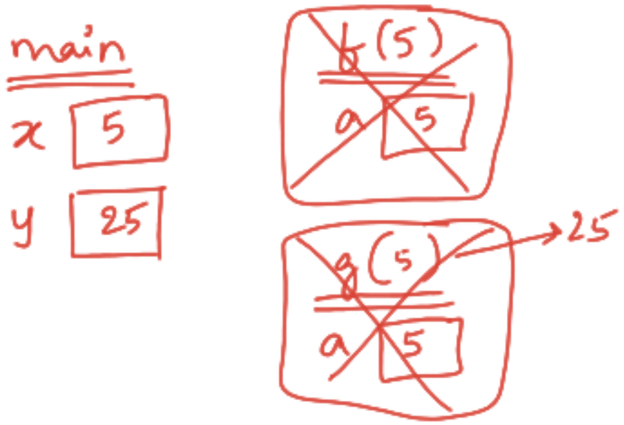
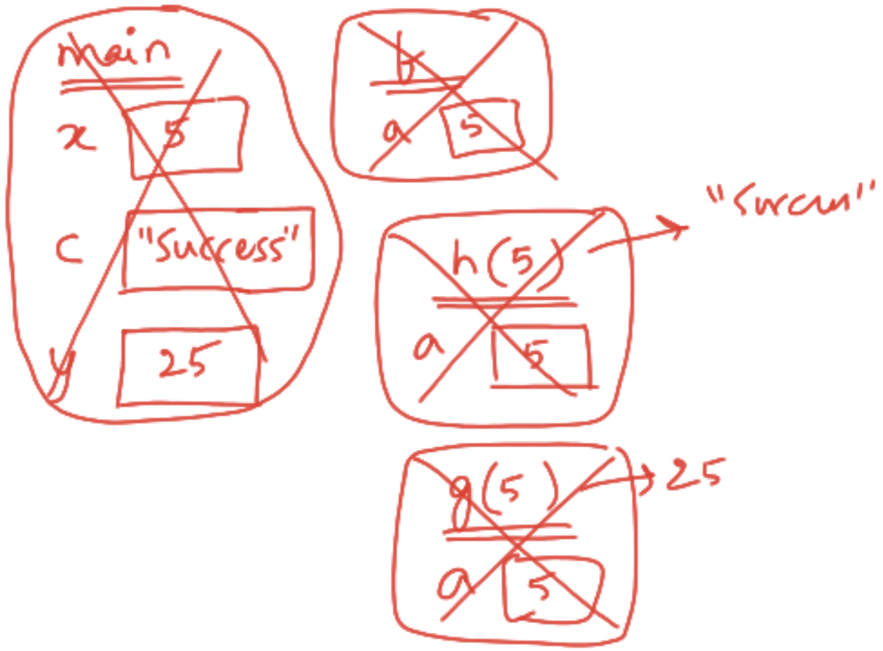
Console

TSO 5: 25
TSO 5: 25



Console

5^2 = 25
5^2 = 25
Succes
5^2 = 25



$$factorial(n) = \begin{cases} n \times factorial(n-1) & \text{if } n > 1 \\ 1 & \text{else} \end{cases}$$

$$f(n) = \begin{cases} n \times f(n-1) & \text{if } n > 1 \\ 1 & \text{else} \end{cases}$$

$f(4) = 4 \times f(3)$ 24

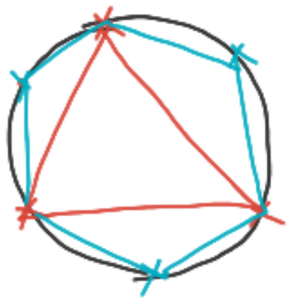
$f(3) = 3 \times f(2)$ 6

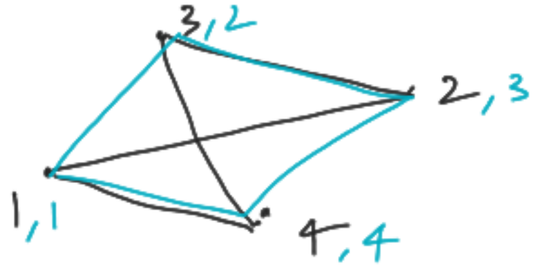
$f(2) = 2 \times f(1)$ 2

$f(1) = 1$

$4! = 4 \times 3 \times 2 \times 1$

$= 4 \times 3!$



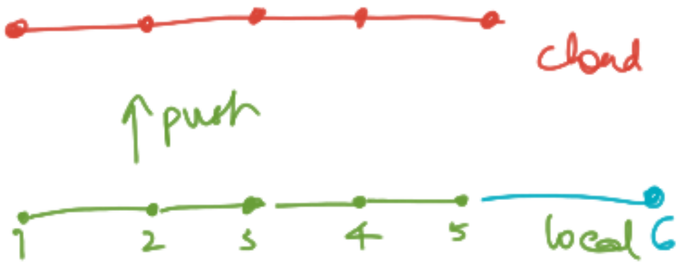


LINEAR
REGRESSION

CLASSIFICATION

Commit

- A chunk of code which makes logical sunce



Student class

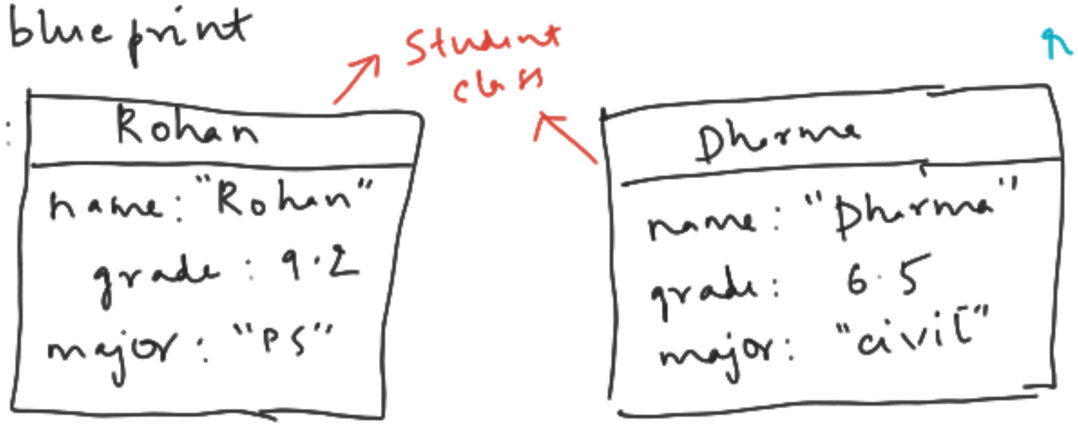
→ defines the blueprint of how any student will look like

→ major, i/c, gender, grade, name, IQ, s/mar, address, can drive?, SSN... } Attributes (properties)

Object

→ Is one concrete instance that follows the class's blueprint

→ Eg:




```
class Student {
    String name;
    double grade;
    String major;
}
```

int x = 5; → value

int → variable type; x → variable name

Creates an object from blueprint of "Student" class

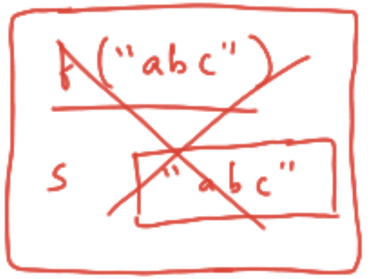
```
Student rohan = new Student();
rohan.name = "Rohan";
rohan.grade = 9.2;
rohan.major = "PS";
println(rohan.grade);
println("Student" + rohan.name
```

Student 'Rohan' from 'PS' has 9.2!

```
void f(String s){
    println("Hello "+s);
}
void main(args){
    String x = "abc";
    f(x);
    f("Rohan");
}
```

Console

```
Hello abc
Hello Rohan
```




```
class Point {
    int x;
    int y;
}
```

```
class Driver {
    void printPoint(Point p) {
        println("Point {x="+p.x+", y="+p.y+"}");
    }

    void main(args) {
        Point p = new Point()
        int x = 5 → value
        ↓ type   ↓ variable name
    }
```

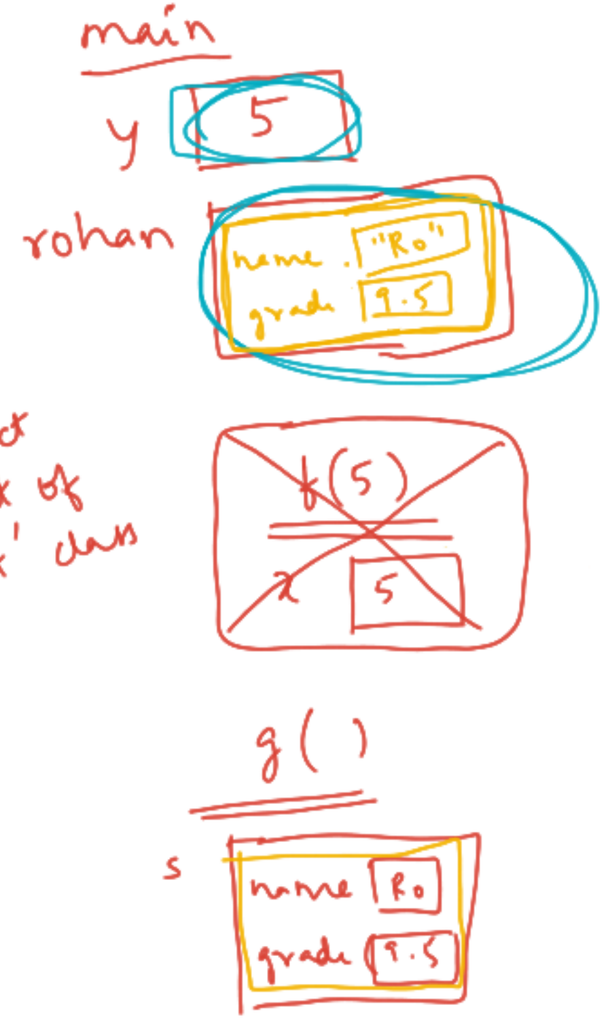
```
class Student{
    String name;
    double grade;
}
```

Console

x: 5

```
class Driver {
    void main (){
        int y;
        y=5
        Student rohan;
        rohan = new Student()
        rohan.grade= 9.5;
        rohan.name="Ro";
        f(y);
        g(rohan);
    }void f( int x){
        println ("x: " + x);
    }
    void g ( Student s) {
        print ("Student{");
        print ("name=" + s.name);
        print (", grade=" + s.grade);
        println ("}")
    }
```

new Student() → create an object from blueprint of 'Student' class



```
int[] a = {-5, 7, 13};
for (int i=0 ; i < a.length; i++) {
        int num= a[i];
        println (num);
}

for (int num : a){
        println(num) ;
}
```

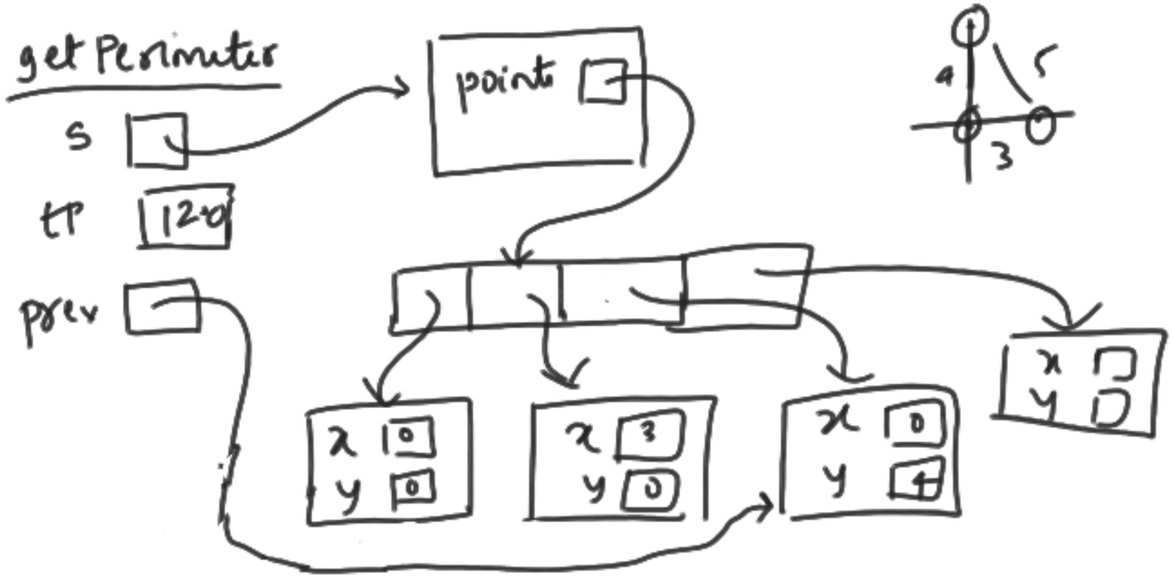
Console

-5
7
13

-5
7
13

```
class Car {
    String name;
    int year;
    Car(String n, int y) {
        name = n;
        year = y;
    }
}
```

```
class Driver {
    Void main() {
        Car c = new Car();
        print(c.name);
        c.name = "I8";
        c.year = 2015;
        print(c.name); // I8
        Car c1 = new Car("I8", 2015);
        print(c1.name); // I8
    }
}
```



(p1, p2, p3)

p1.dist(p2)
+ p2.dist(p3)
+ p3.dist(p1)

```
dist=0
prev = p3
for (curr : arr){
  dist = dist +
        prev.dist(curr);
  prev = curr;
}
```

dist → 0
0 + p3.dist(p1)
+ p1.dist(p2)
+ p2.dist(p3)

[p1, p2, p3, p4]

perimeter = 0

p1.d(p2)
p2.d(p3)
p3.d(p4)
p4.d(p1)

prev = p4
for (Point p : s.getPoints()){
  peri = peri + prev.dist(p)
  prev = p
}

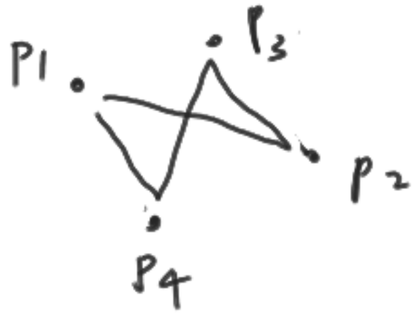
p4.dist(p1)
+ p1.dist(p2)
+ p2.dist(p3)
+ p3.dist(p4)

points = {p1, p2, p3, p4}

```
per = 0
per = per + (points[0].dist(points[points.length-1]))
for (i=0; i<4-1; i++)
  Point p = points[i]
  Point next = points[i+1]
  per = per + p.dist(next)
}
```

p1.d(p2) + p2.d(p3) + p3.d(p4)

```
getPerimeter(Shape s){
    total = 0
    for {
        side
        total = total + side
    }
```



P1 P2 P3 P4

d(P1 P2) + d(P2 P3)
+ d(P3 P4) + d(P4, P1)

④ curr P4 prev P3
d(P3, P4)
prev = P4

curr : {P1 P2 P3 P4}
① curr : P1 prev : P4
d(P4, P1)
② curr : P2 prev = P1
d(P1, P2)
③ curr : P3 prev : P2
d(P2, P3)

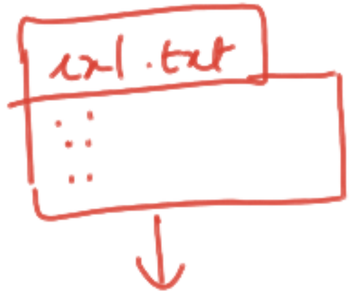
[-3, -7, -2]

max = -3

max = -∞

[p1 p2 p3]

max = s.getStartPoint().getX()



getPerimeter(s);

s = new Shape(fr);

(Shape Object)

fr (FileResource Object)

dr → ex1.txt ex4.txt

dr (DirectoryResource object)

DirResource maxP = 0.0

IterableFile>

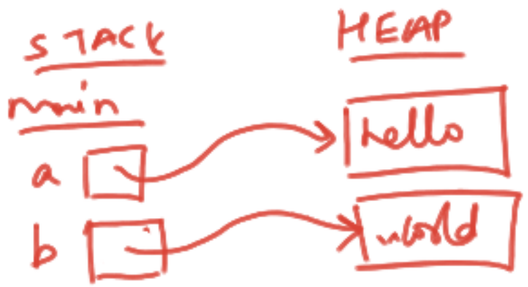
fr(File f : dr.selectedFiles()){

// 1. Create a FileResource obj from File obj

// 2. Create shape from fr

// 3. Get perimeter from shape

```
String a = "hello";
String b = null;
b = "world";
```



0 1 2 3 4 5 6 7 8 9 10 11 12

CAATGGCCTAAGC

2 8

TAAATGABCTAA

0 1 2 3 4 5 6 7 8 9 10 11

```
x = s.indexOf("ATG");
```

x → 3

```
y = s.indexOf("TAA", x);
```

y → 9

```
s = s.substring(x, y+3);
```

3 12

ATGTAA

```
start = ..
stop = ..
if (start==-1 || stop == -1){
    "";
}
```

```
start = ..
if (start==-1)
    ...

stop = ..
if (stop == -1)
    ""
```


```
void f(int x) {
 1 if (x < 0) {
 2     print("negative")
 3 }
 4 print("positive");
}
```

f(5) → positive

f(-3) → negative positive

```
void g(int x) {
 1  if (x < 0) {
 2      print("negative");
        return;
 3  }
 4  print("pos");
}
```

g(5) → positive

g(-3) → negative

```
void h(int x) {
    if (x < 0) {
        print("negative");
    } else {
        print("positive");
    }
}
```

h(5) → positive

h(-3) → negative

```
class Point {
    int x;
    int y;
    void print() {
        print(x, y);
    }
}
```

```
class Driver {
    main() {
        Point p = new Point();
        p.x = 5;
        p.y = -3;
        p.print();
    }
}
```

create new instance

call print() on that instance

```
class Driver {
    main() {
        Part1 p = new Part1();
        p.testSimpleGene();
    }
}
```

"ATGTAA" → "ATGTAA"

"" → ""

"TAAATG" → ""

"TAAATGATGGCATAAGA"

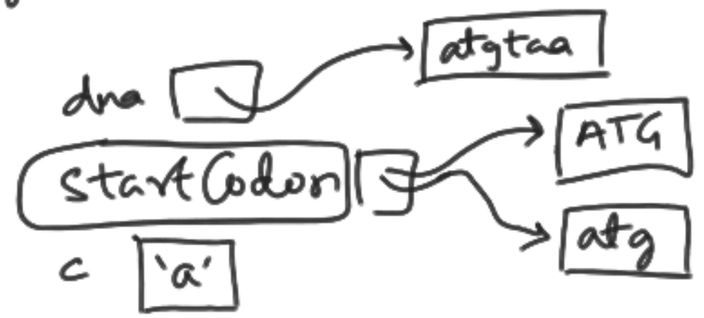
→ "ATGGCATAA"

dna = "atgfcctaafc"

startCodon = ATG | atg

stopCodon = TAA

atgfcctaa



c >= 'a' || c <= 'z'

97 122

a b c d ... z

'A'

A - 65

Z - 90

1. a in b once → false
2. a & b are same → false
3. a in b thrice → true
4. a in b doesn't exist → false
5. a & b are empty → false
6. a in b twice → true
7. len(a) > len(b) → false

```
      012345
d → banana
c → an

fI → 1
return d.substring(fi+c.length(), d.len)

      01234
d → Rohan
c → Roh
fI → 0
d.sub(0+3, 5) → an

d.sub(1+2, 6) → ana
```

```
c → volu
d → revolutim
    0123456789
fi → 2
d.sub(2+4, 10) → tim

c → sea
d → sea
    012
fi → 0
d.sub(0+3, 3) → ""
```

```
i 6

hello
world
hello
hello
hello
world
hello
hello
hello
world
end
```

```
Shape s = new Shape(fr);
for (Point p : s.points()){
    `P'
}
```

```
for (int i=0; i<10; i++){
    println("hello");
    if (i%3 != 0){
        continue;
    }
    println("world");
    if(i == 6){
        break;
    }
}
println("end");
```

href = "https://YouTube.com/aBcD" >

href: "http://youtube.com/ABC" >

href : "http://YOUTUBE.com/abc" >

String s = "rohan"
0 1 2 3 4

s.substring(1,4); → oha

s.substring(2, s.length()) → han

s.substring(3) → an
s.substring(3, s.length())

0 1 2 3 4
string a = "hello"
string b = "This is hello world"
0 1 2 3 4 5 6 7 8 9 10

pos → 6

b.substring(6, 5)
(pos + string a.length()