IT Fundamentals

Programming Basics

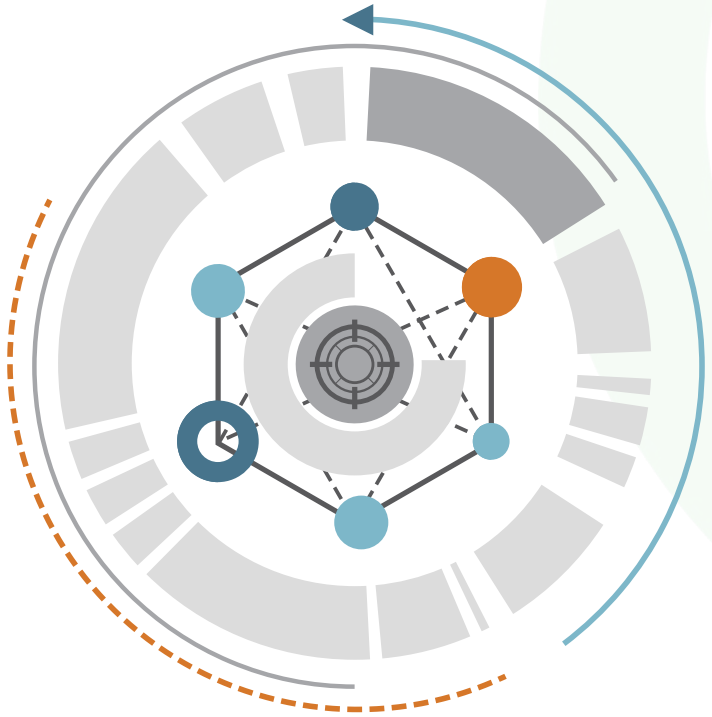
- Problem çözme
- Computational Thinking
  - Decomposition
  - Pattern Recognation
  - Abstraction
  - Algorithm
  - Flowchart
  - Pseudo Code

Computational Thinking

Computational Thinking

Decomposition | Pattern Recognation | Abstraction | Algorithm

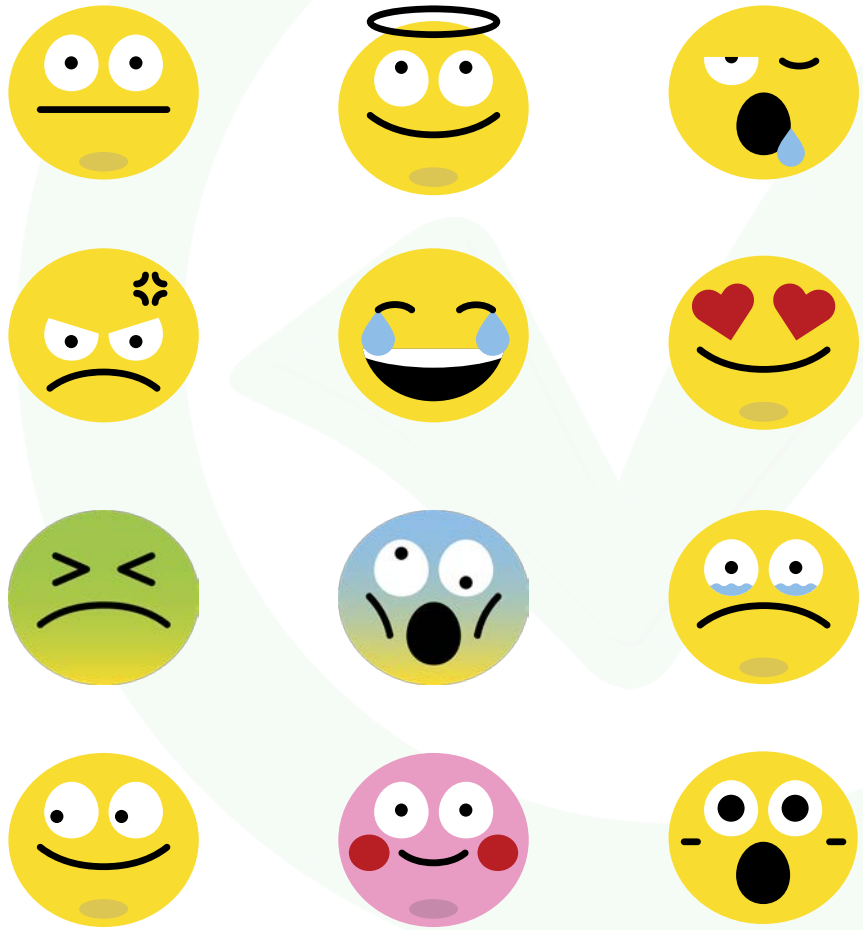
Böl, Parçala, Çöz



Decomposition

PRACTISE

- Yüz, göz ve ağız tipleri belirlenebilen emoji yapılmak isteniyor. Bu proje için decomposition yapınız.

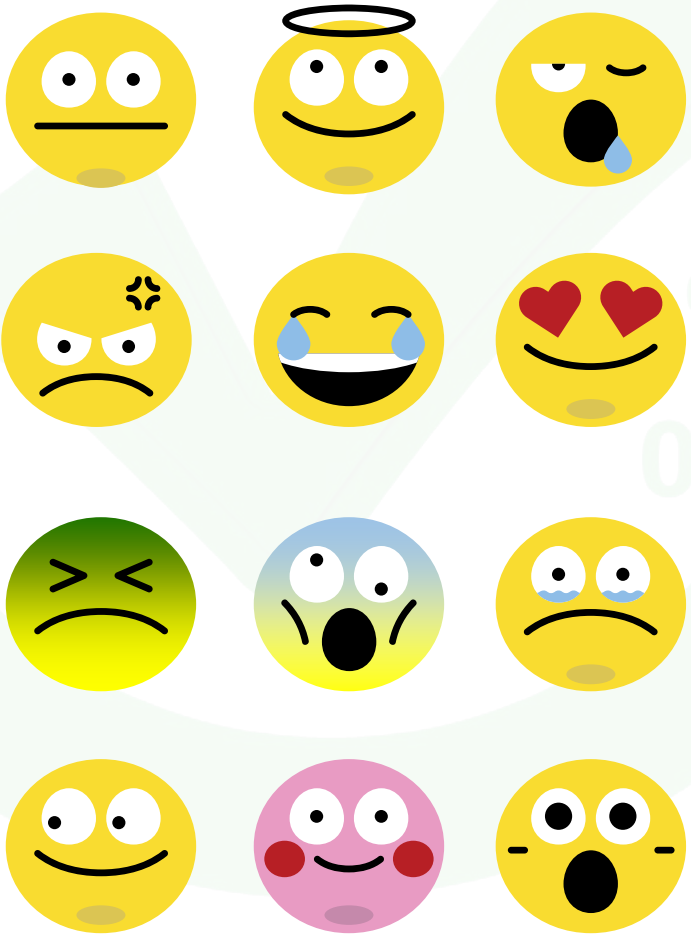


Decomposition

AĞIZLAR

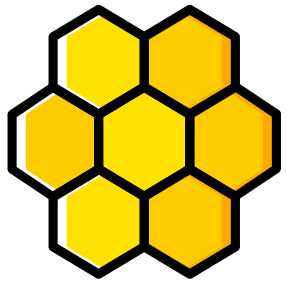
GÖZLER

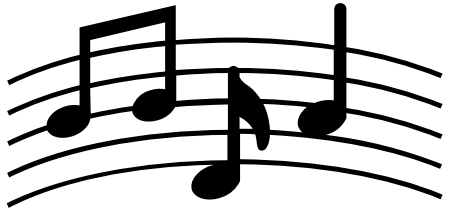
YÜZLER

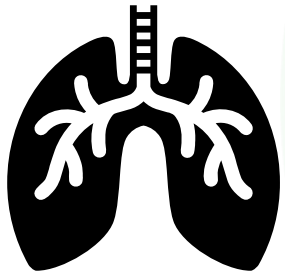


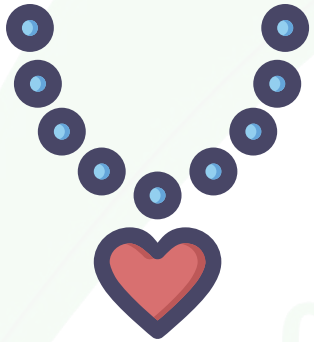
Computational Thinking

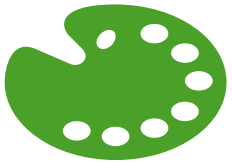
Decomposition | **Pattern Recognation** | Abstraction | Algorithm







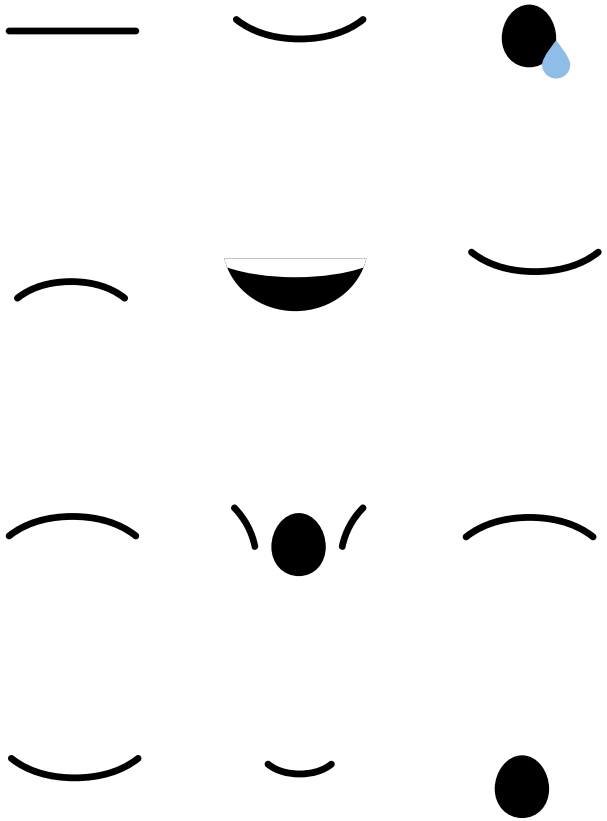




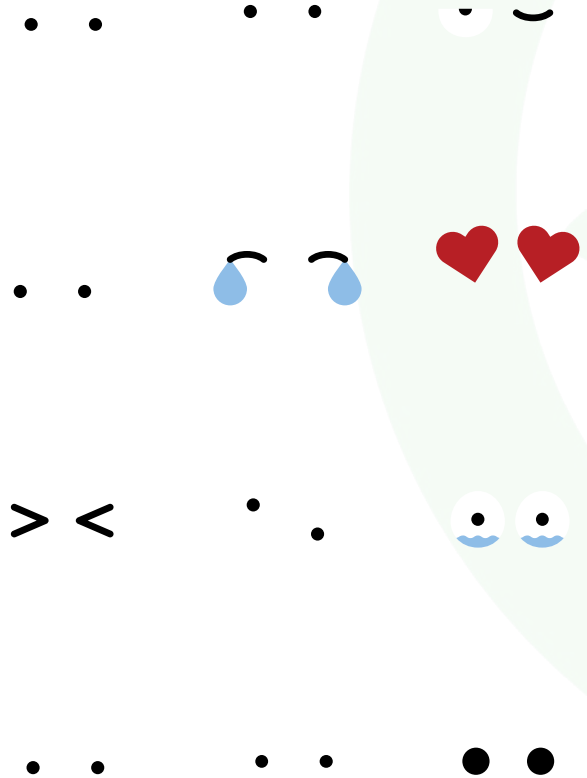
Pattern Recognation

PRACTISE

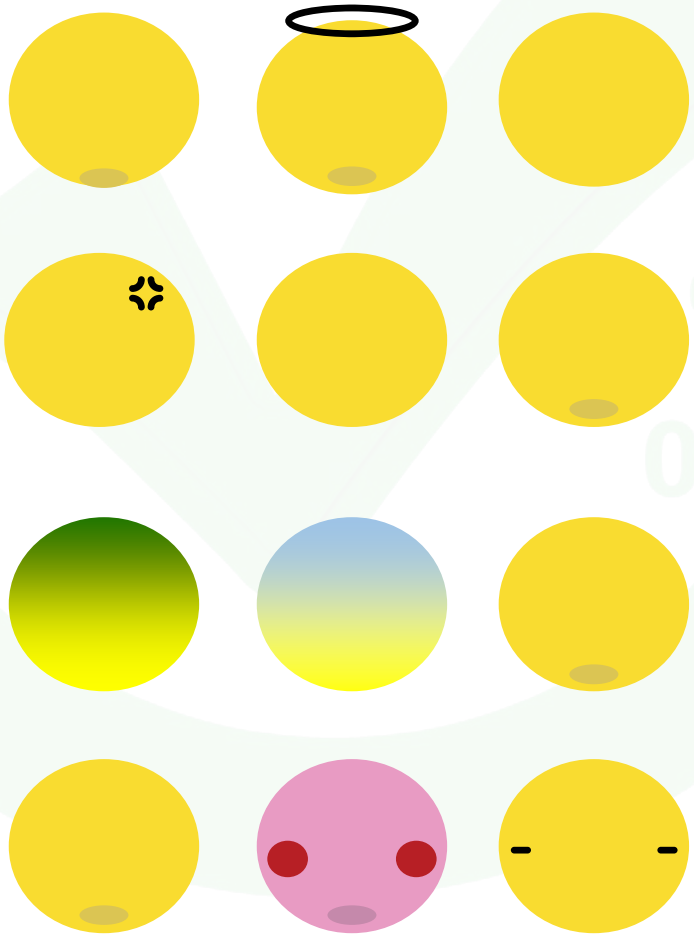
AĞIZLAR



GÖZLER



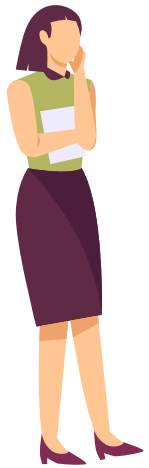
YÜZLER

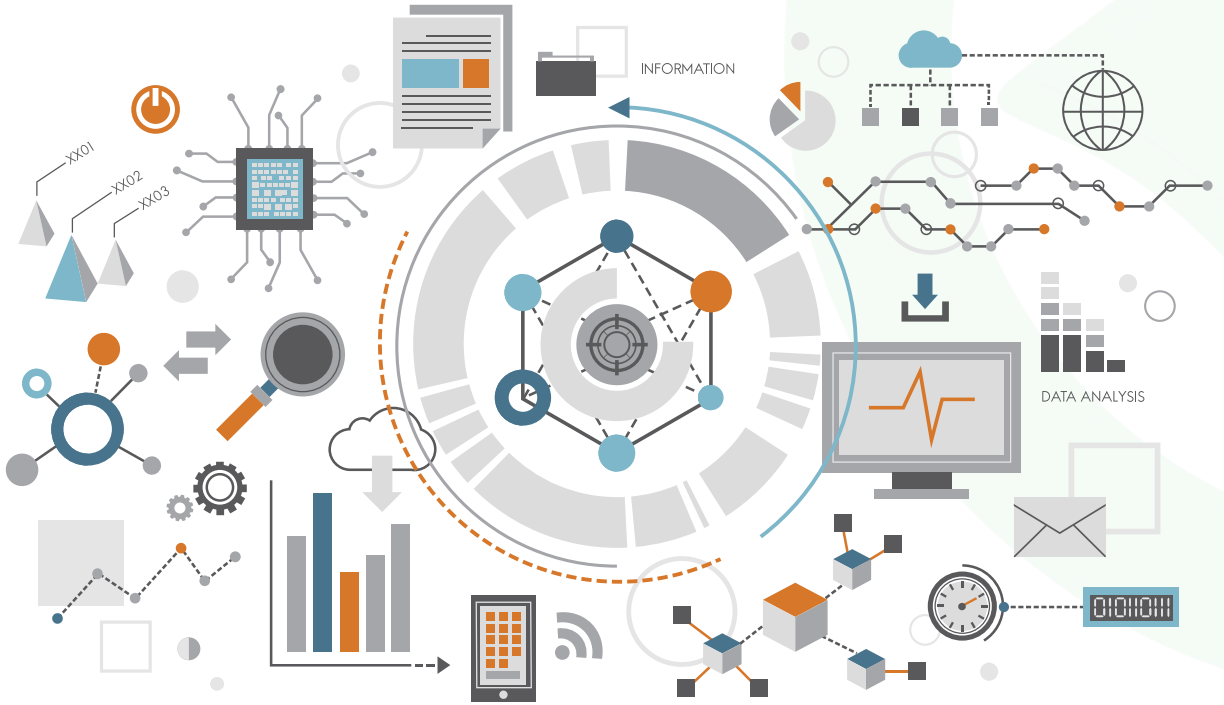


Computational Thinking

Decomposition | Pattern Recognation | **Abstraction** | Algorithm

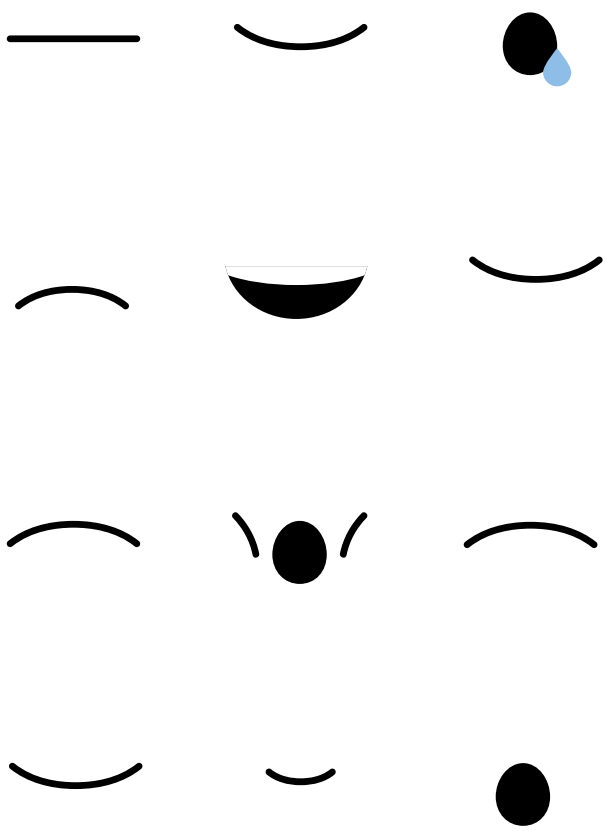
«Look at the big picture»

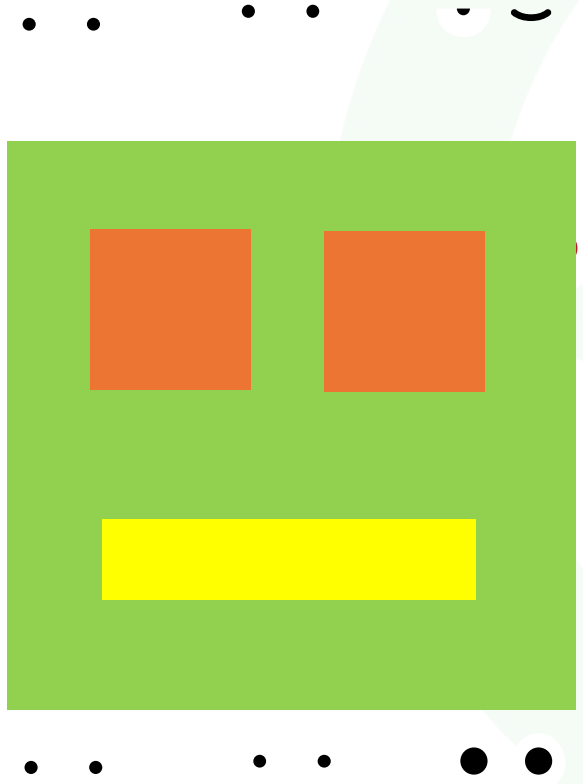


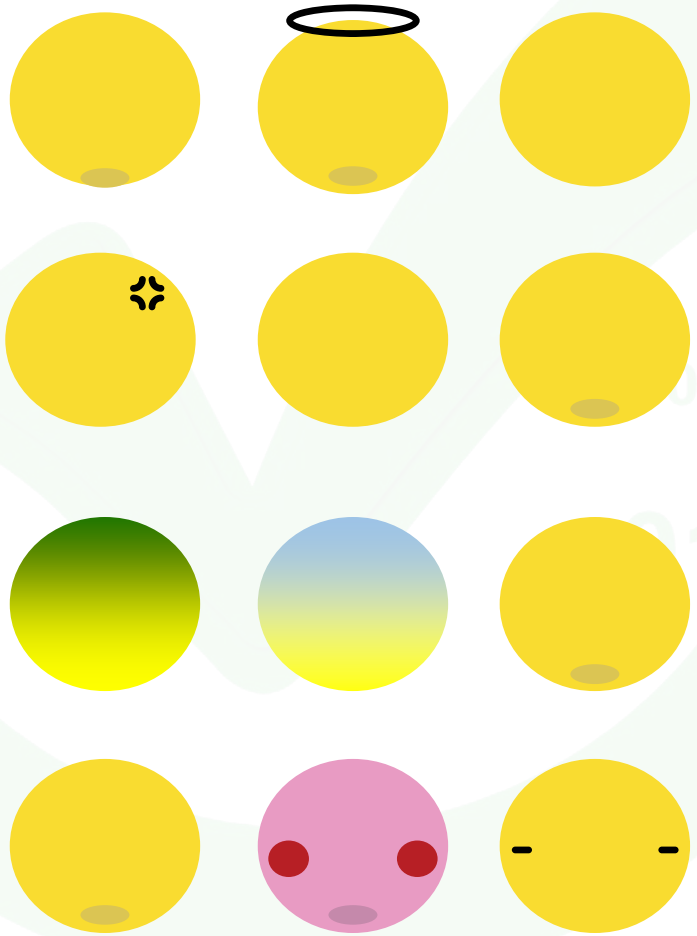


Abstraction

PRACTISE







CT Videos

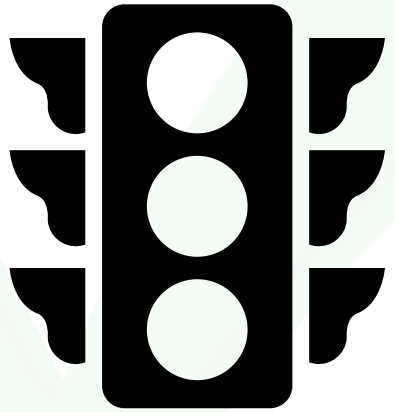
- https://www.youtube.com/watch?v=mUXo-S7gzds

- https://www.youtube.com/watch?v=_TWsmF8l418
- https://www.youtube.com/watch?v=91utNt5qshE

Computational Thinking

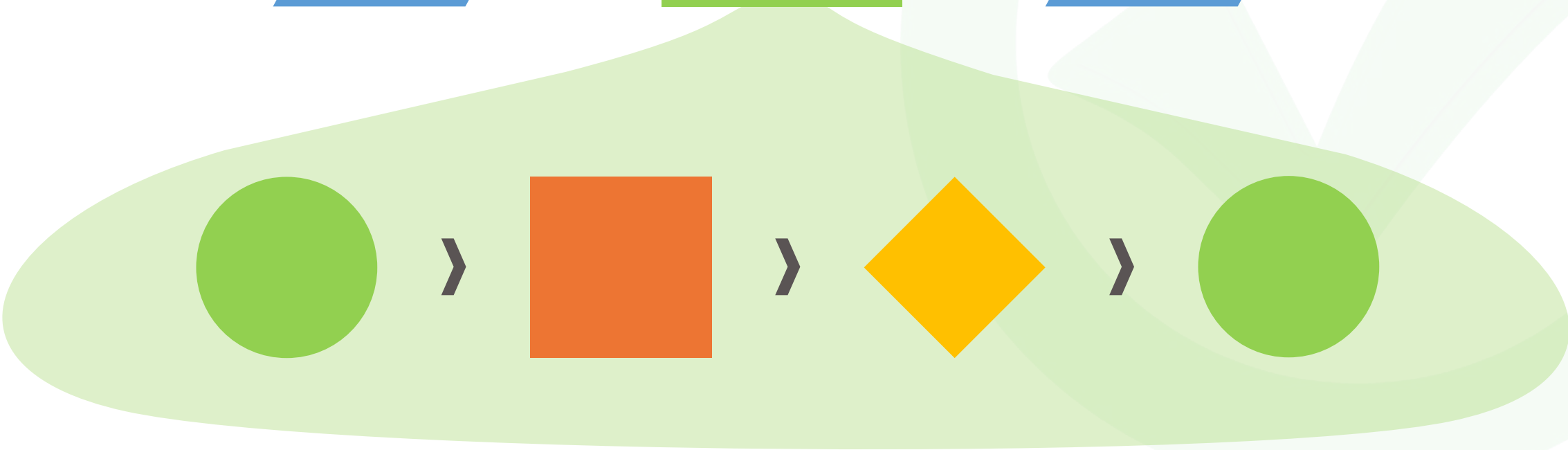
PRACTISE

Kırmızı ışıkta geçen araçları tespit edip plakasına ceza kaydı oluşturacak bir sistem yapılacaktır. Bu problemi computational thinking kullanarak çözünüz.



Computational Thinking

Decomposition | Pattern Recognation | Abstraction | **Algorithm**



Programlamanın Temelleri

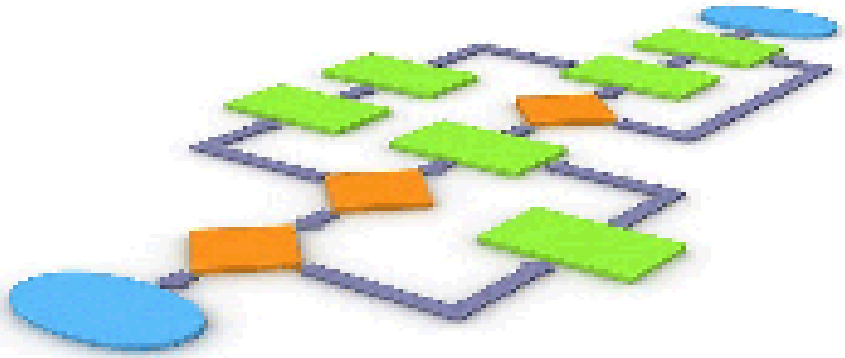
Küçük bir çocuğa ortam sıcak olduğunda klimayı açmasını nasıl anlatabiliriz ?

- Ortamın sıcak olduğunu düşündüğünde eline klima kumandasını al.
- Klima kumandasındaki büyük kırmızı düğmeyi bul.
- Kırmızı düğmeye 1 kez bas.
- Sorun yaşarsan bir büyüğünden yardım iste.

Programlamanın Temelleri

Peki bu görevi bir programa yüklersek nasıl olurdu ?

- Ortam sıcaklığını ölç.
- Sıcaklık 27 derecenin üstünde ise klimayı çalıştırır.
- Ortam sıcaklığını 15 dakikada bir ölç ve gerektiğinde tekrar çalıştır.



Programlamanın Temelleri

Algoritma nedir ?

Algoritmanın faydası nedir ?

Programlamanın mantığı

Algoritma

PRACTISE

El yıkama algoritmasını yazınız

*Algoritma

PRACTISE

4 kişilik makarna pişirme programının algoritmasını yazınız.

*Algoritma

PRACTISE

2 sayının toplamını bulan programın algoritmasını yazınız.

*Algoritma

PRACTISE

3 sayının ortalamasını bulan programın algoritmasını yazınız.

Pseudo code

- Algoritmaların, herhangi bir dile bağımlı olmadan, programlama dillerine daha yakın ifadelerle yazılmasına pseudocode denir.

Pseudo code

Örnek: İki Sayının Toplamı Algoritması

29

Düz Yazı

1. BAŞLA
2. Birinci sayıyı gir
3. İkinci sayıyı gir
4. İki sayıyı topla
5. Sayıların toplam değerini yaz
6. BİTİR

Sözde Kod

Toplam için T, birinci sayı için X, ikinci sayı için Y seç

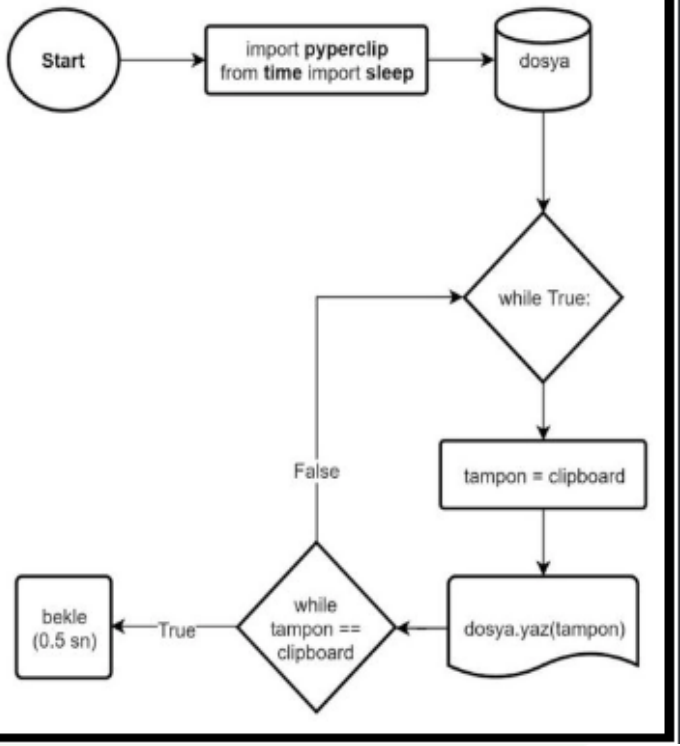
1. BAŞLA
2. X değerini OKU
3. Y değerini OKU
4. T = X + Y
5. T değerini YAZ
6. BİTİR

Clip.py

python için clipboard algoritması.

Pseudo Code

1. Başla
2. Dosya oluştur
3. Clipboard'u kopyala
4. Dosyaya Clip. Yaz
5. Clipboard değişti mi?
    1. Eğer değişmediyse Bekle 1 sn
    2. Eğer değiştiyse Dön 3. adım



Pseudo code

Komut	Açıklama
START	Pseudo kodun başladığınız gösterir
DECLARE	Değişkenleri tanımlamak için kullanılır.
INPUT	Kullanıcıdan bilgi alındığında kullanılır
READ / GET	Bir dosyadan bilgi okunurken kullanılır
PRINT, DISPLAY, SHOW	Sonuç göstermek için kullanılır
SET, INIT	Değer atamak için kullanılır
IF, ELSE IF, ELSE	Karar yapılarında kullanılır
WHILE	Belli kod bloklarını tekrar ettirmek için kullanılır
END	Pseudo kodun bittiğini gösterir

*Pseudo code

Klavyeden girilen iki sayının ortalamasını alan programın algoritmasını yazınız

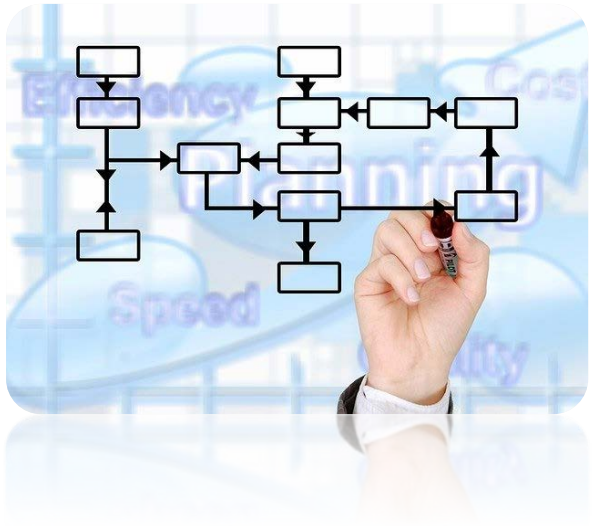
Komut	Açıklama
START	Pseudo kodun başladığınız gösterir
DECLARE	Değişkenleri tanımlamak için kullanılır.
INPUT	Kullanıcıdan bilgi alındığında kullanılır
READ / GET	Bir dosyadan bilgi okunurken kullanılır
PRINT, DISPLAY, SHOW	Sonuç göstermek için kullanılır
SET, INIT	Değer atamak için kullanılır
IF, ELSE IF, ELSE	Karar yapılarında kullanılır
WHILE	Belli kod bloklarını tekrar ettirmek için kullanılır
END	Pseudo kodun bittiğini gösterir

*Pseudo code

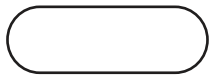
Kenar ve yüksekliği klavyeden girilen üçgenin alanını hesaplayan programın algoritmasını yazınız

Komut	Açıklama
START	Pseudo kodun başladığınız gösterir
DECLARE	Değişkenleri tanımlamak için kullanılır.
INPUT	Kullanıcıdan bilgi alındığında kullanılır
READ / GET	Bir dosyadan bilgi okunurken kullanılır
PRINT, DISPLAY, SHOW	Sonuç göstermek için kullanılır
SET, INIT	Değer atamak için kullanılır
IF, ELSE IF, ELSE	Karar yapılarında kullanılır
WHILE	Belli kod bloklarını tekrar ettirmek için kullanılır
END	Pseudo kodun bittiğini gösterir

Flowchart

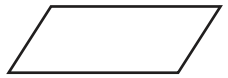


- Pseudocode un şekillerle gösterilmesidir



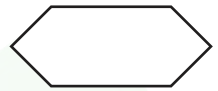
Başlama ve bitirme

Değer atama ve aritmetik işlemler

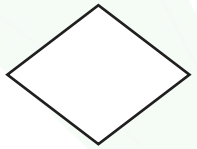


Veri giriş

Fonksiyon



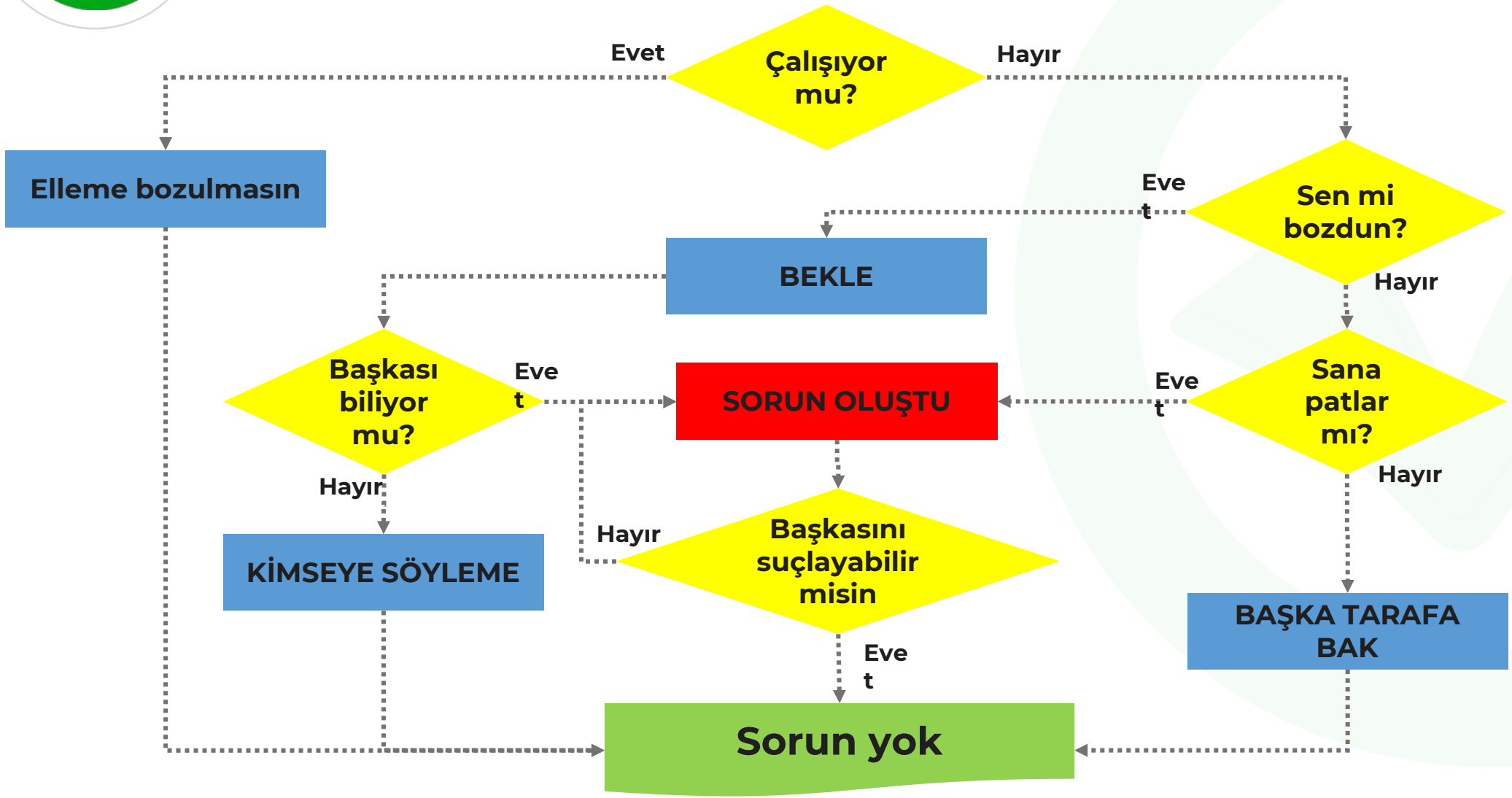
Döngü



Karar verme

Çıktı

Flowchart


Çalışıyor mu?
Evet
Hayır
Elleme bozulmasın
Sen mi bozdun?
Evet
Hayır
BEKLE
Başkası biliyor mu?
Evet
SORUN OLUŞTU
Sana patlar mı?
Evet
Hayır
Hayır
KİMSEYE SÖYLEME
Hayır
Başkasını suçlayabilir misin
Hayır
BAŞKA TARAFA BAK
Evet
Sorun yok

Flowchart

Download & Install

- Flowchart oluşturmak için aşağıdaki uygulamayı indirip bilgisayarınıza kurunuz

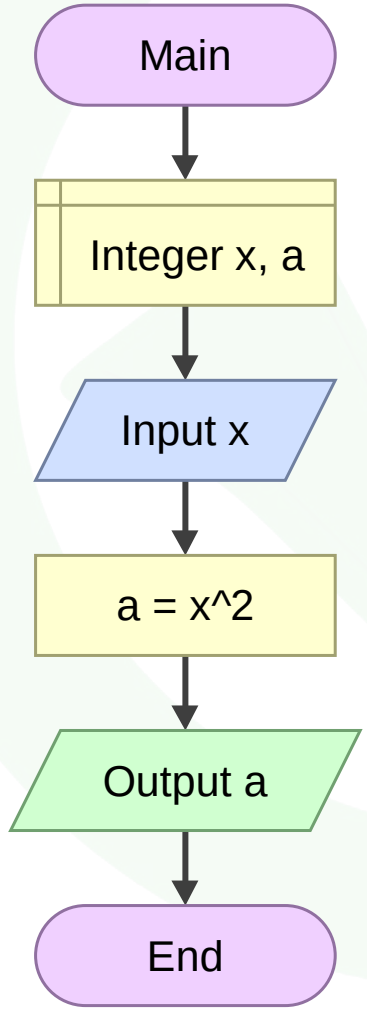
Flowgorithm

http://www.flowgorithm.org

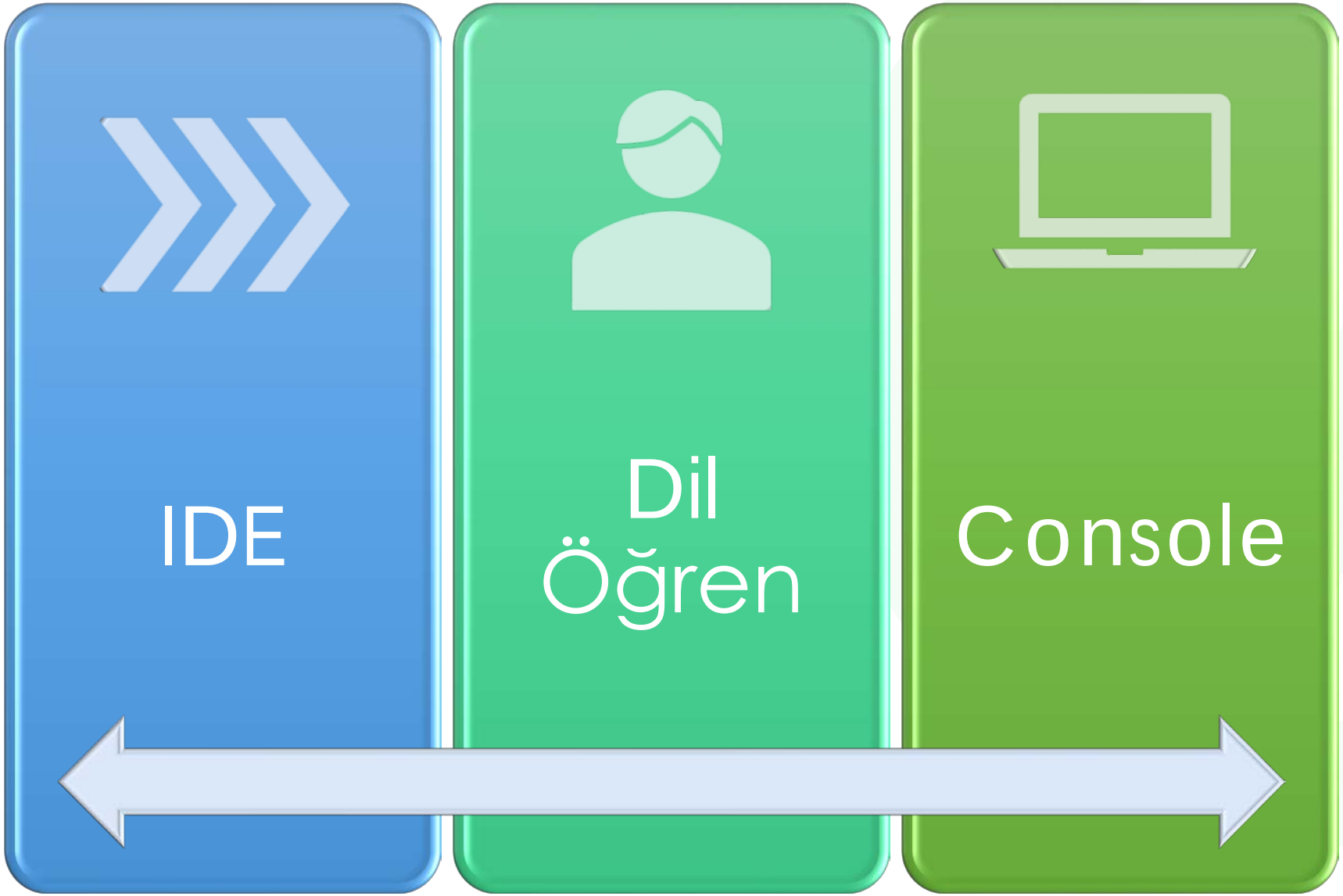
*Flowchart

PRACTISE

Kenar uzunluğu klavyeden girilen karenin alanını bulan ve sonucu gösteren programın flowchart tasarımını yapınız

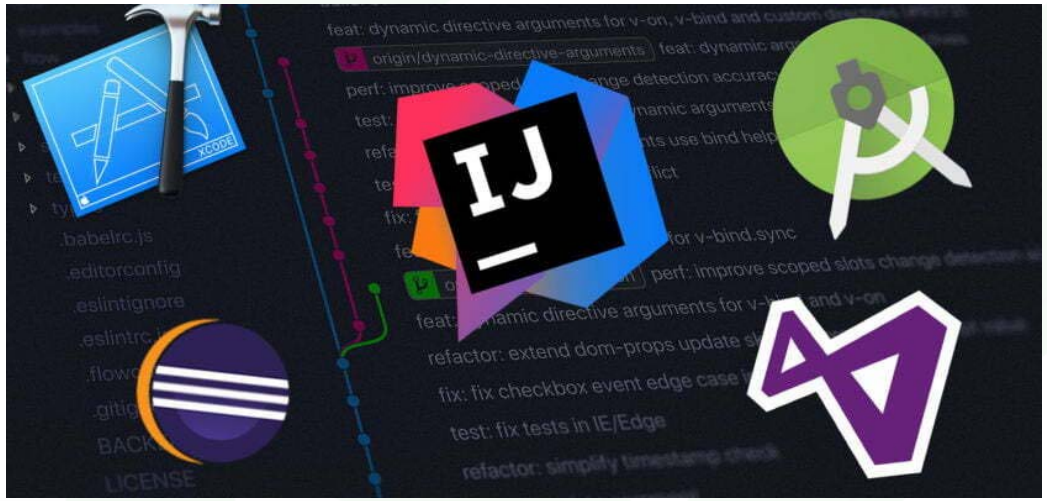


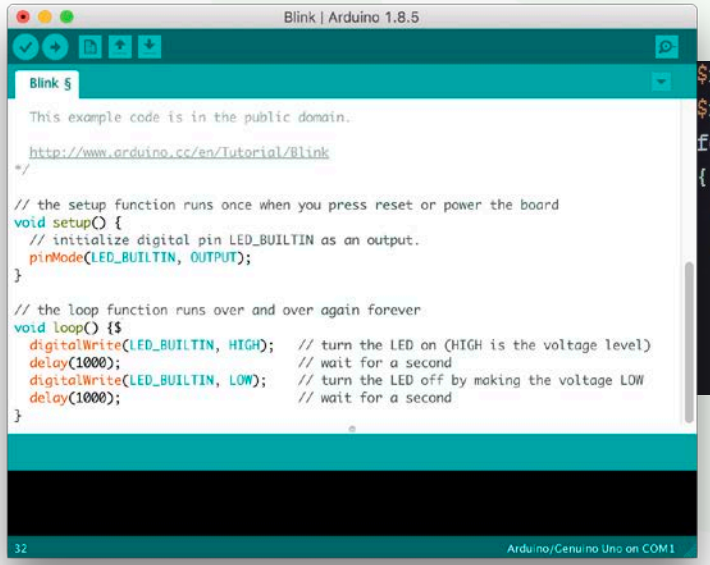
Nasıl Kod yazacağız ?



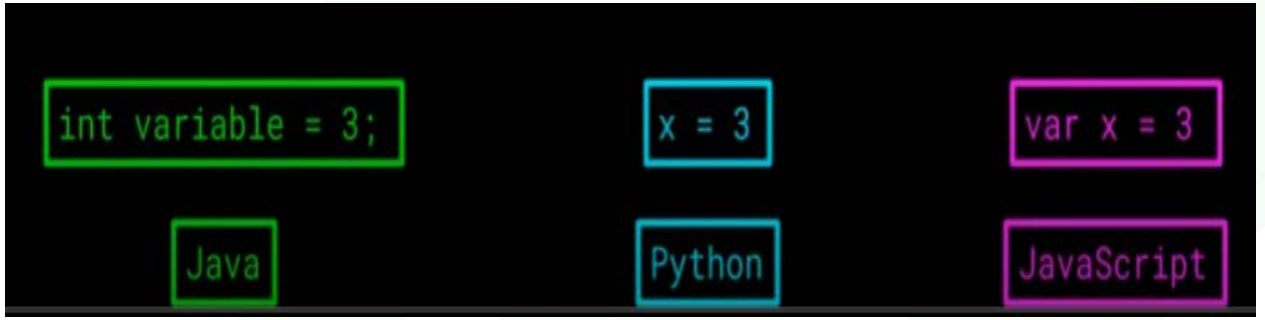
Nasıl Kod yazacağız ?

IDE

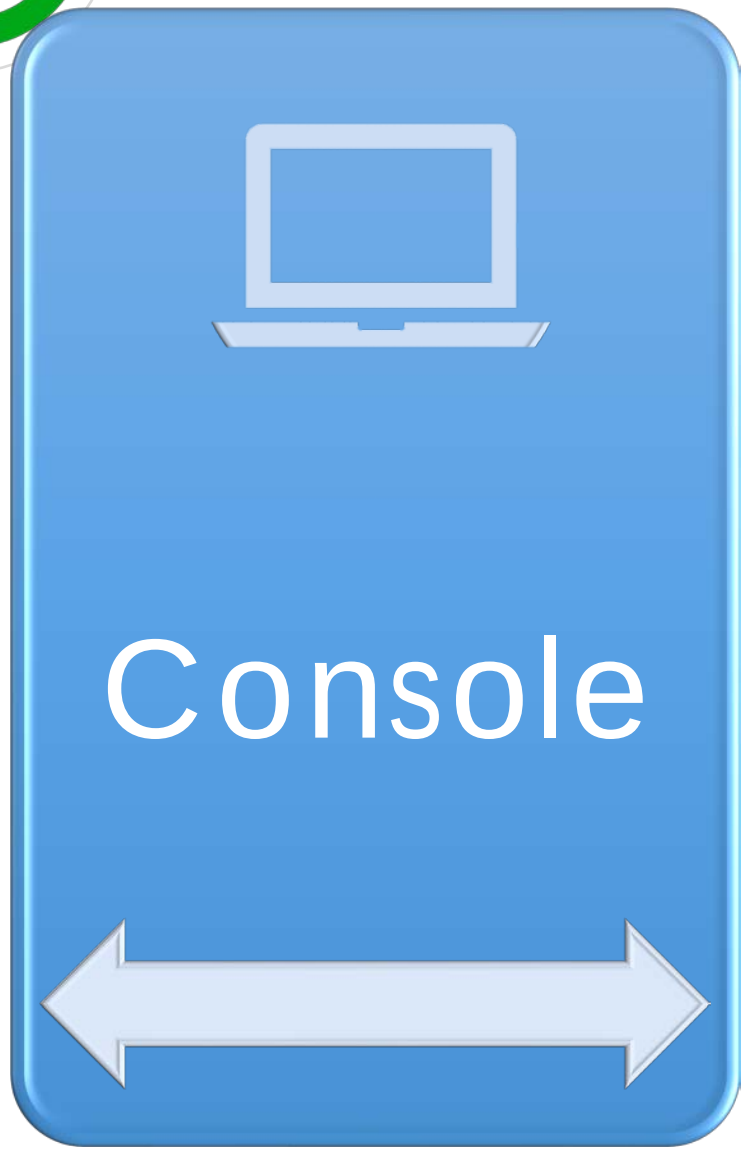


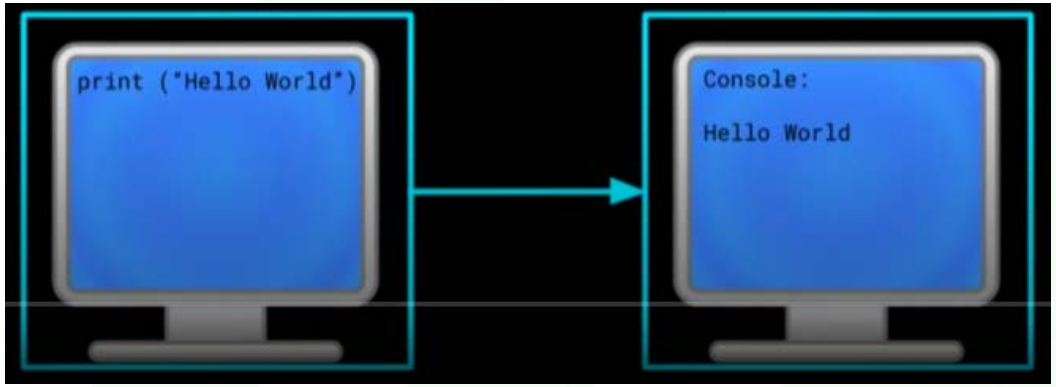


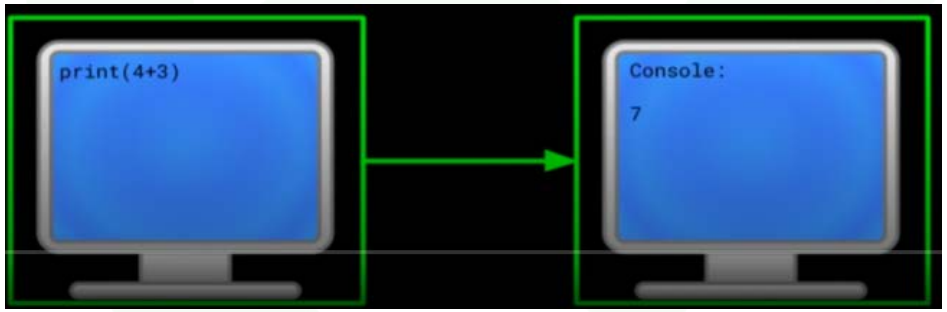
Nasıl Kod yazacağız ?

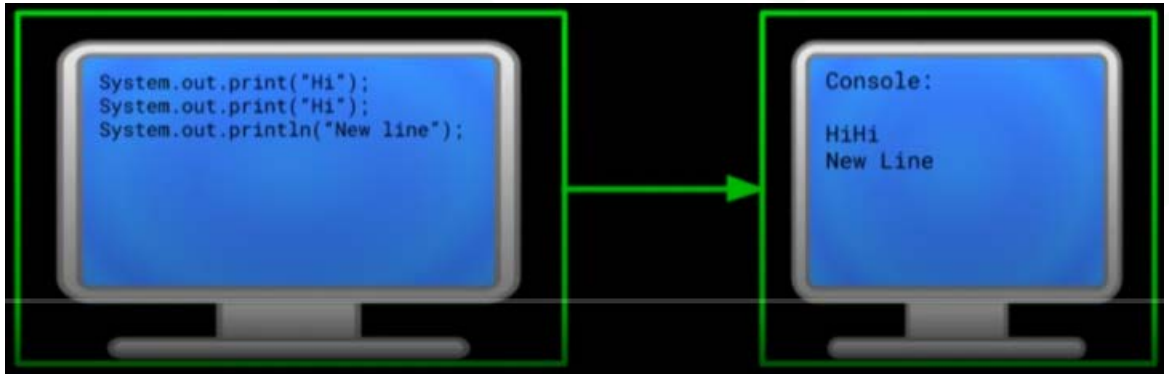


Nasıl Kod yazacağız ?



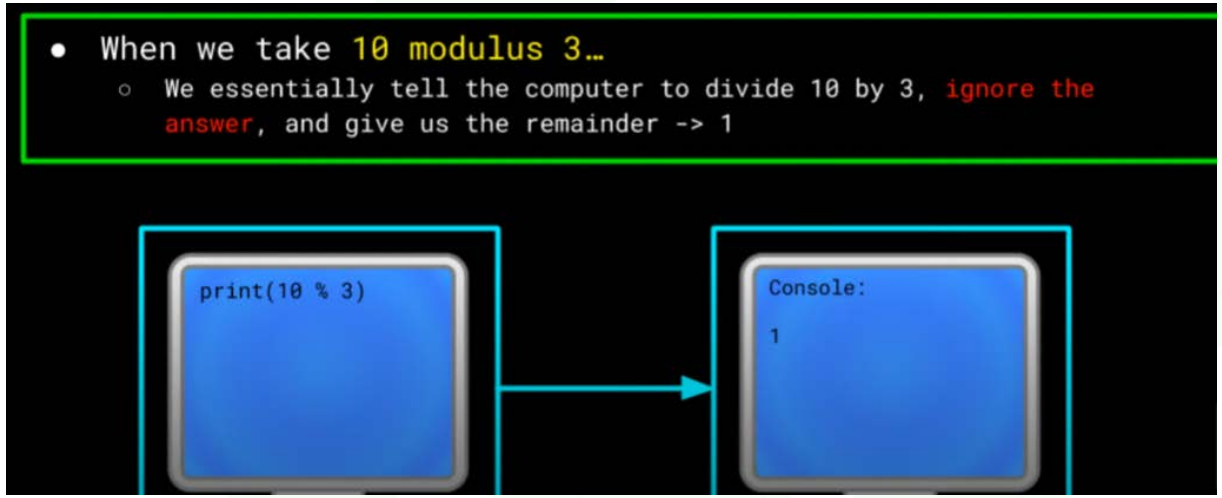


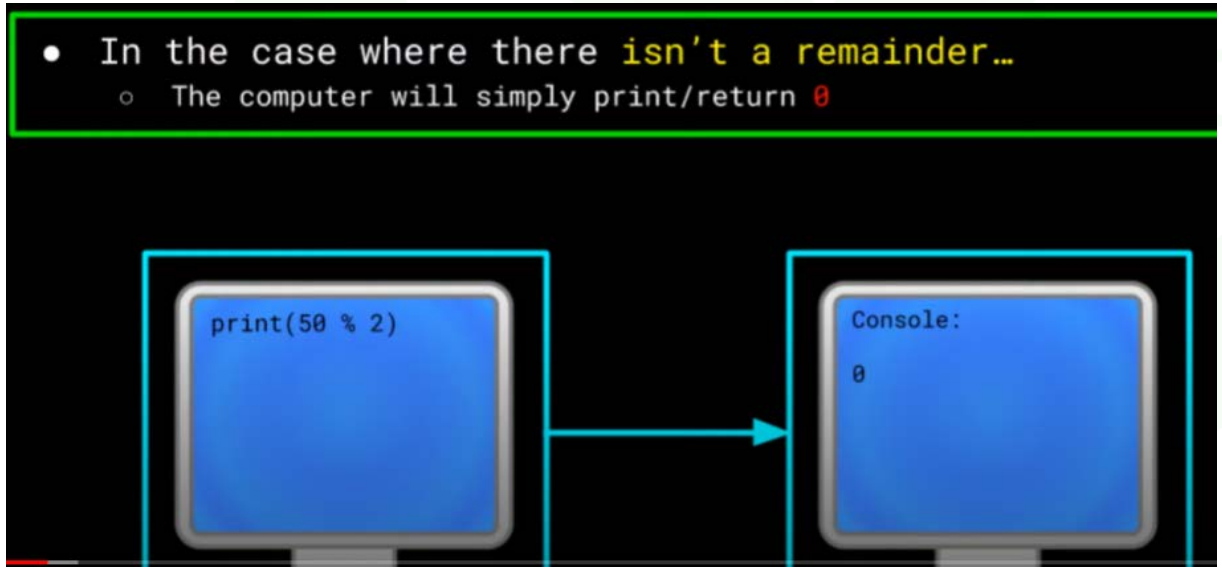




Bilgisayar ne yapabilir o zaman?

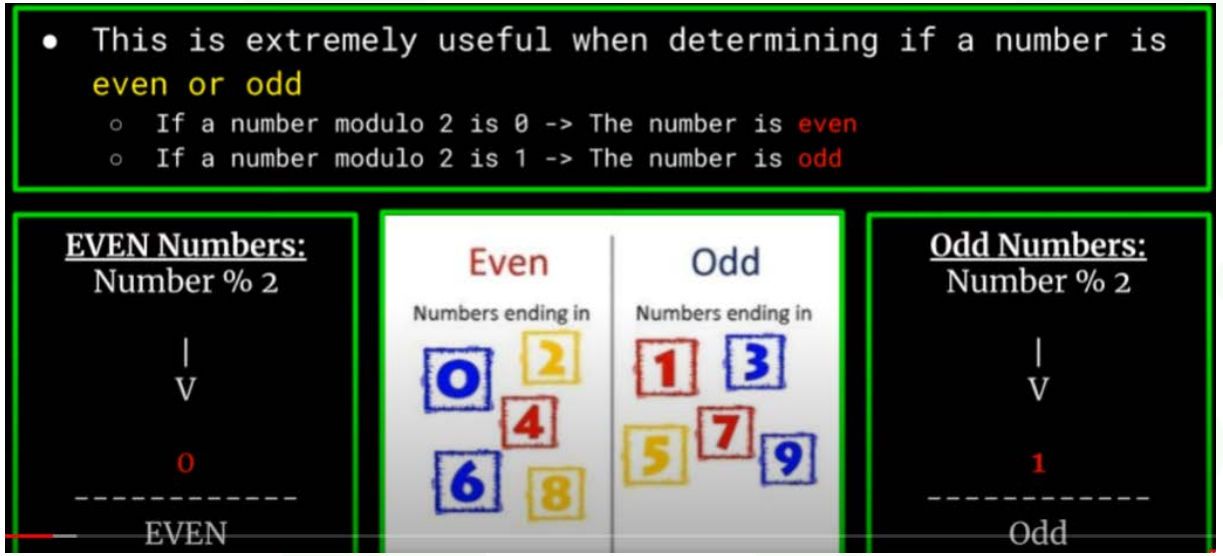
- Mathematics
- Modulus





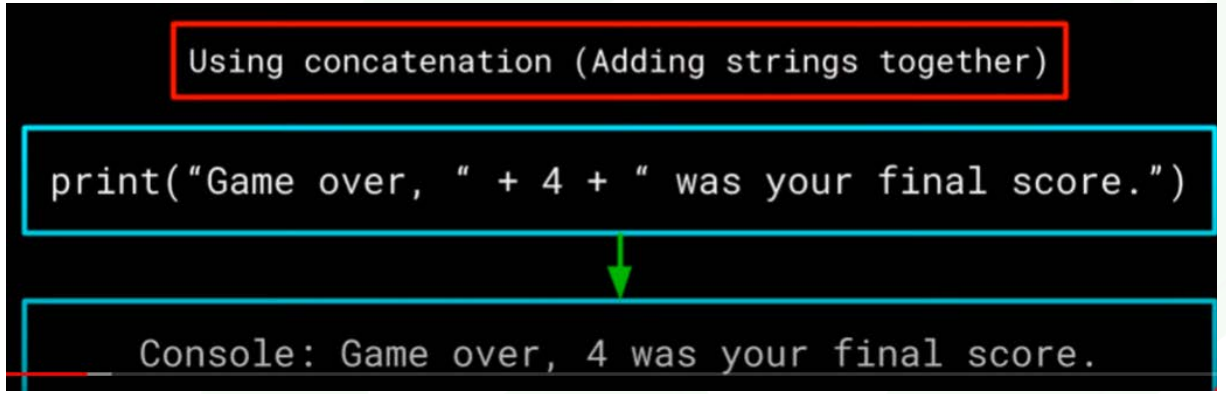
Bilgisayar ne yapabilir o zaman?

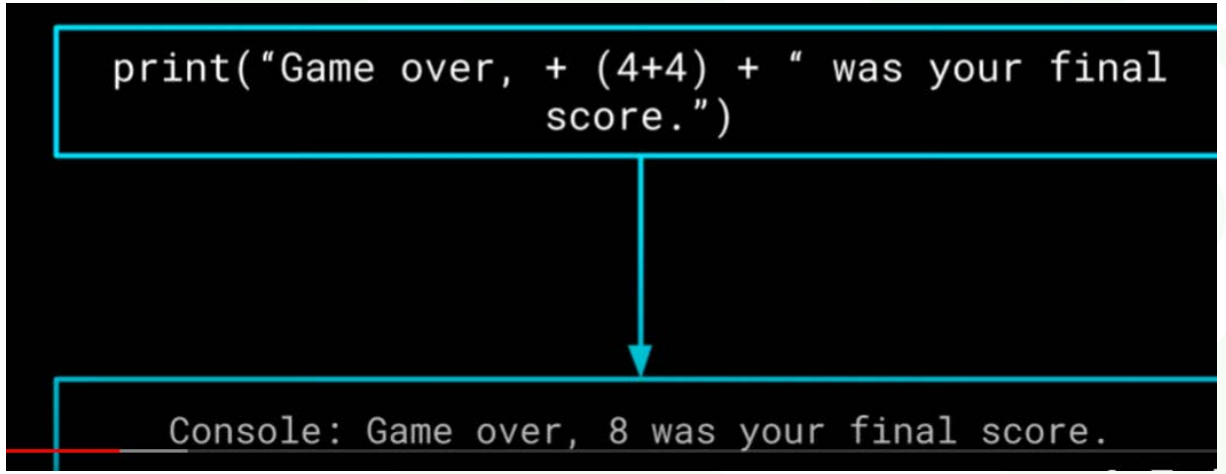
- Tek-Çift Sayılar
- Strings

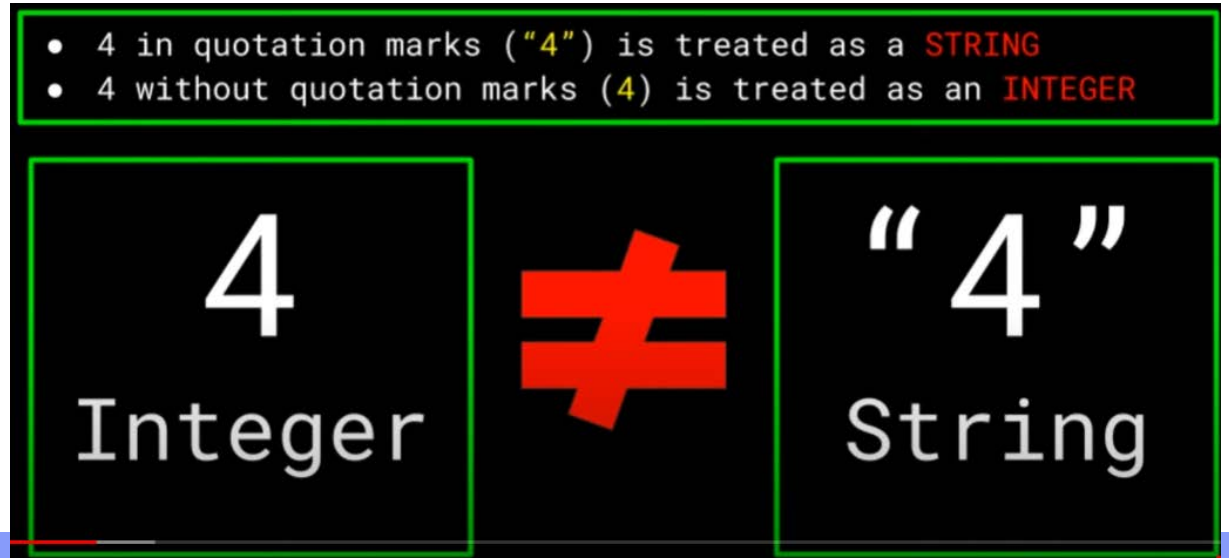


Bilgisayar ne yapabilir o zaman?

- Concatenation

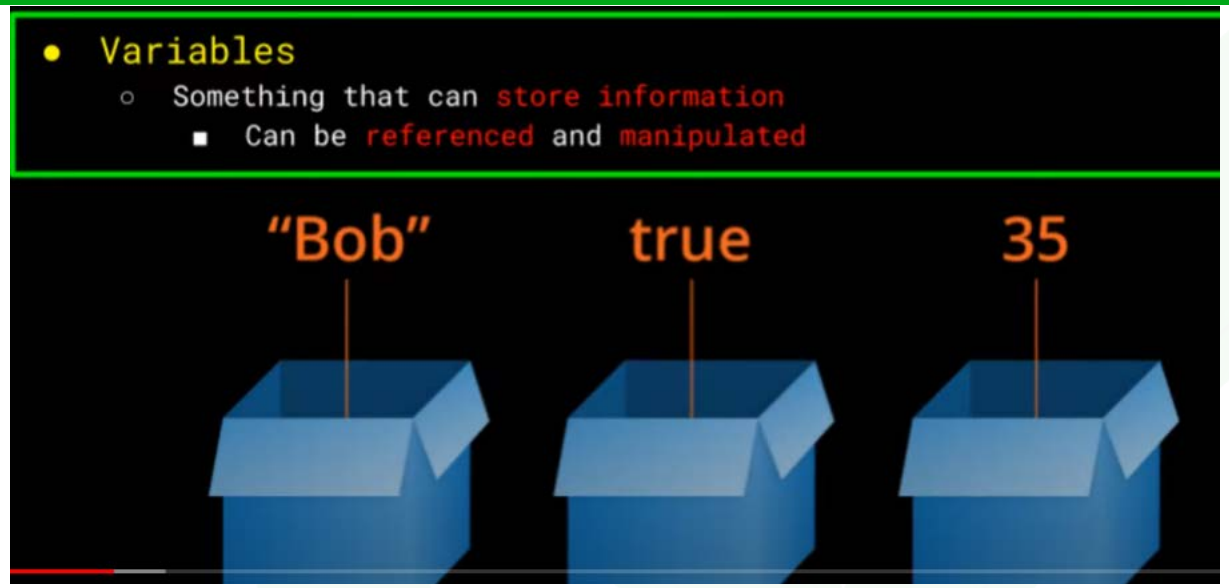


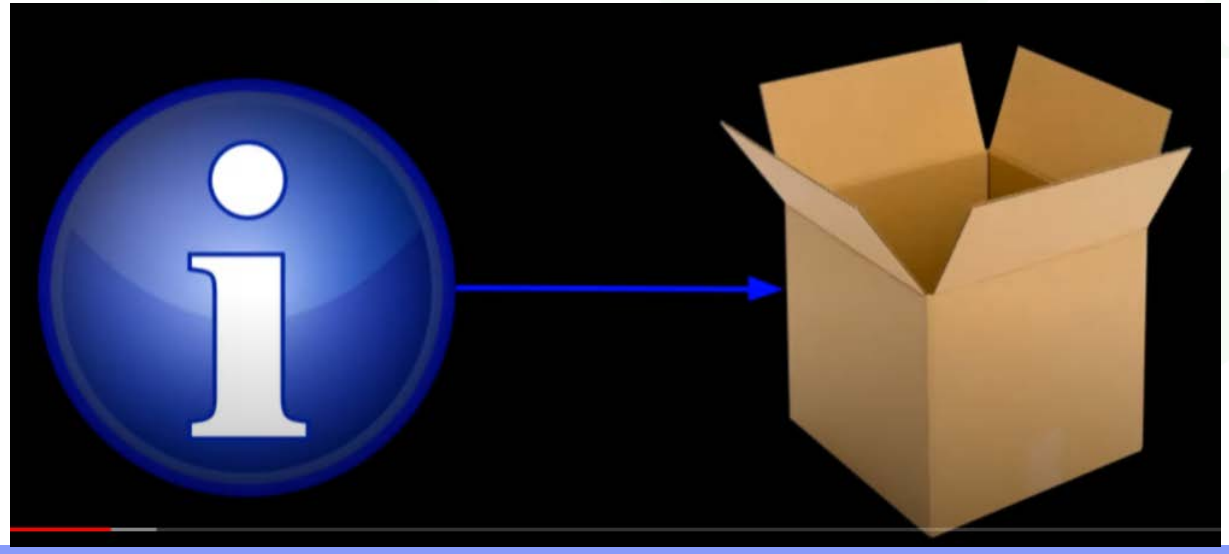




Variables (Değişkenler) nedir ?

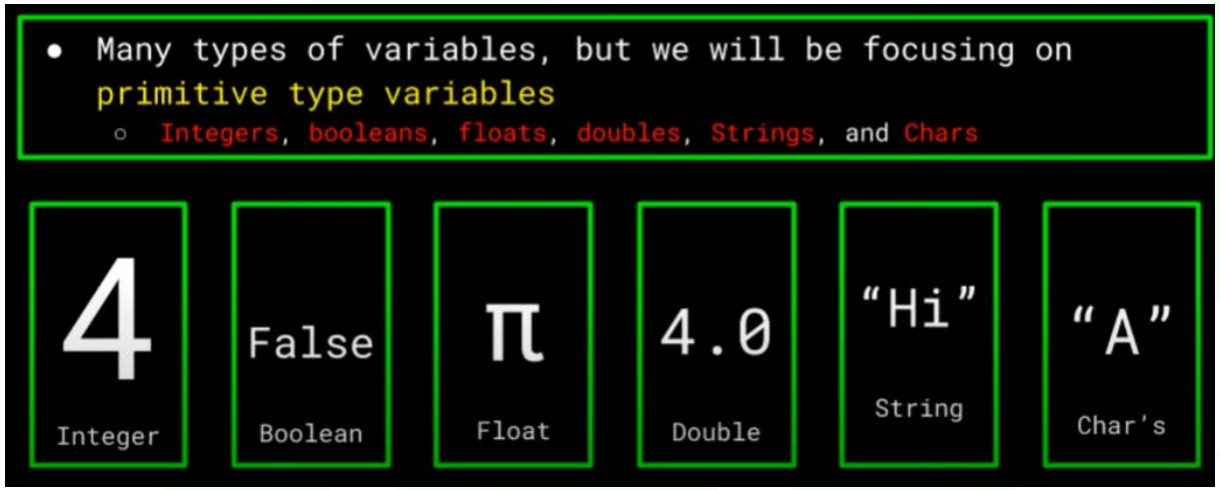
- Variable nedir ?
- Neden Önemlidir ?





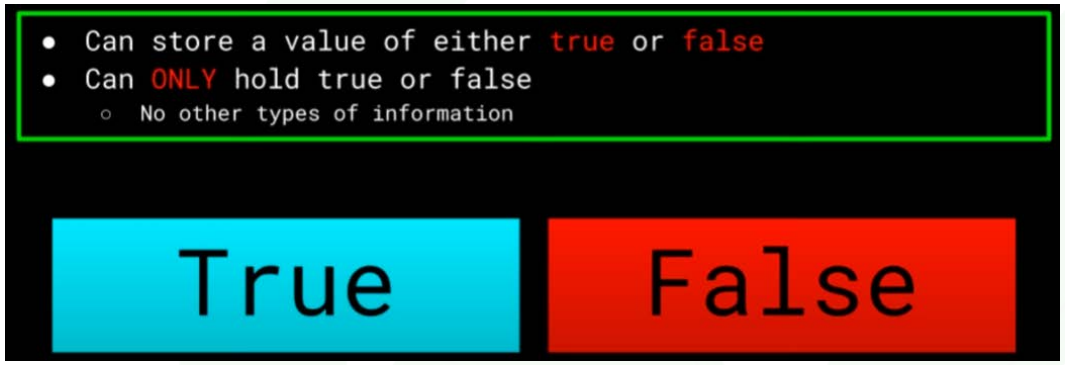
Variables (Değişkenler) nedir ?

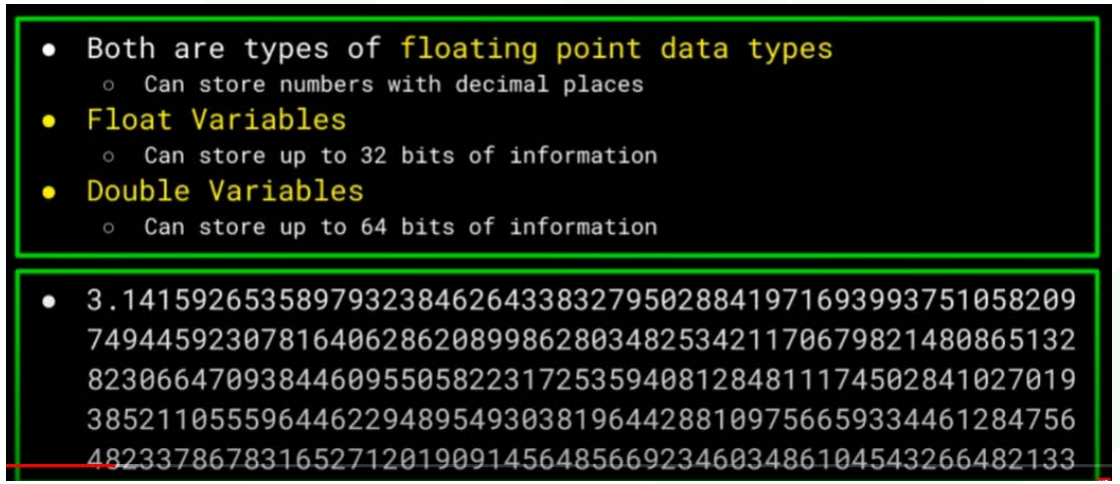
- Variable types
  - Integer



Variables (Değişkenler) nedir ?

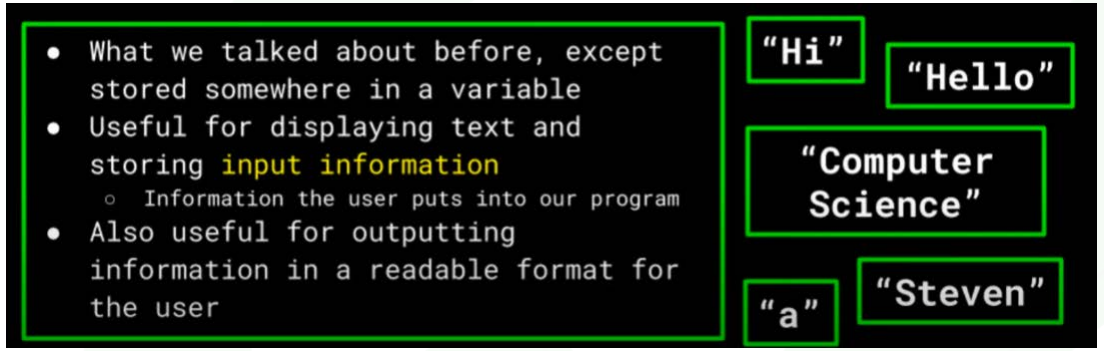
- Variable types
  - Booleans
  - Floats and Doubles

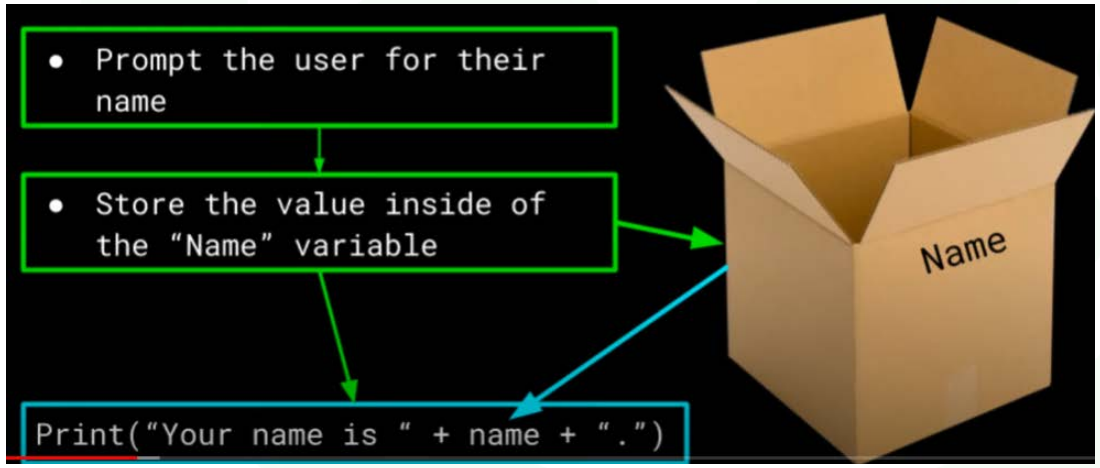


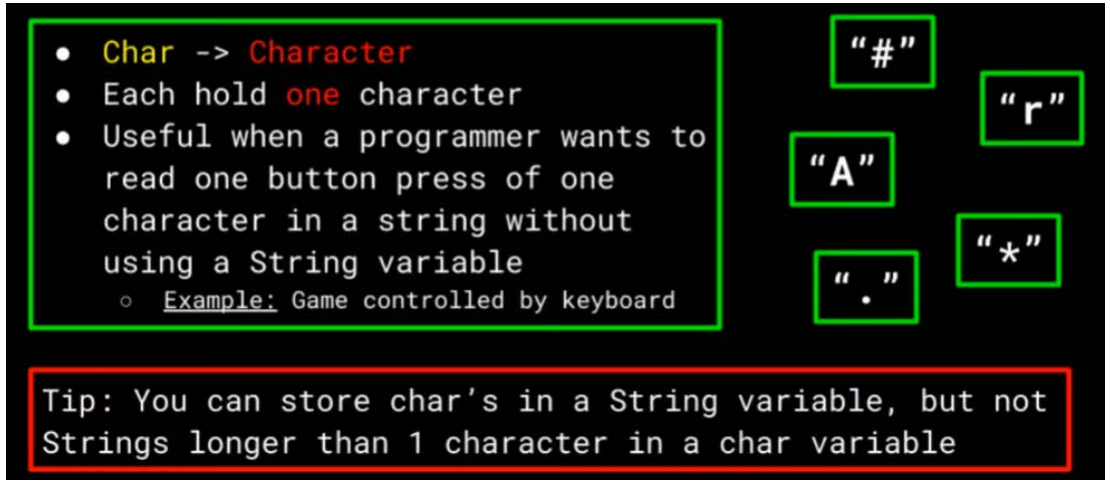


Variables (Değişkenler) nedir ?

- Variable types
  - Strings
  - Char Variable

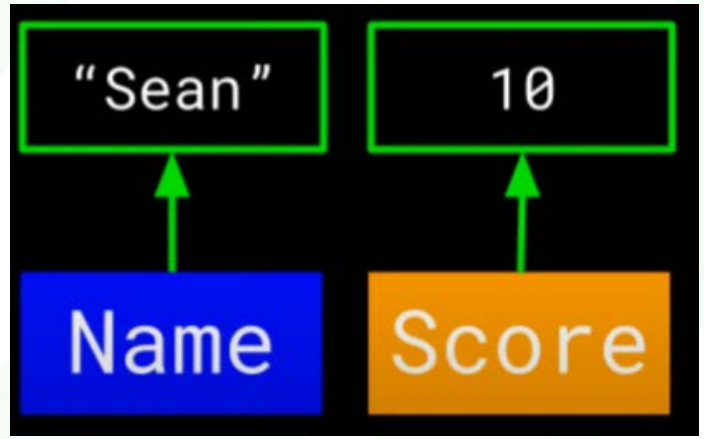


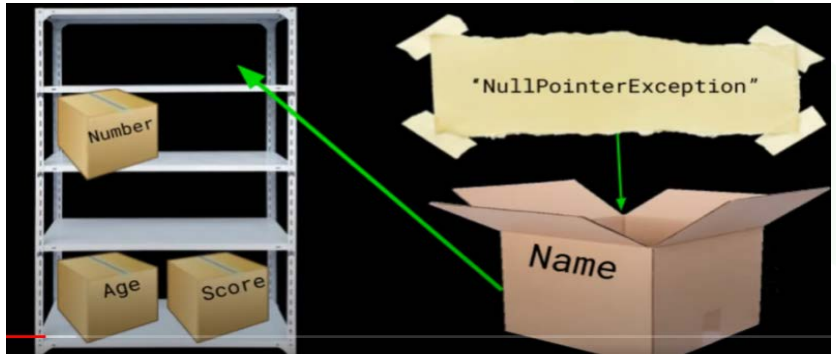


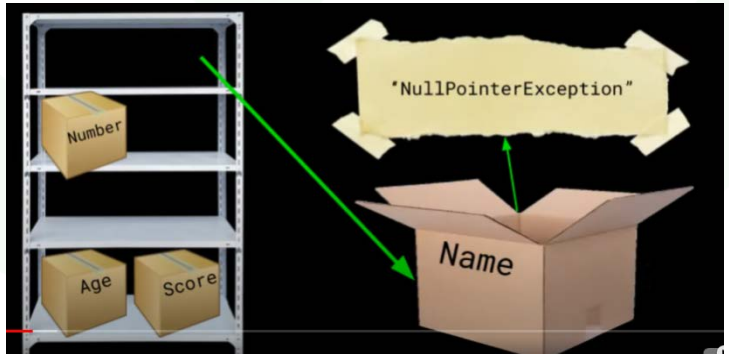


Variables

- Variable'lar neden kullanışlı..
- Variable ları nasıl manipüle edebiliriz

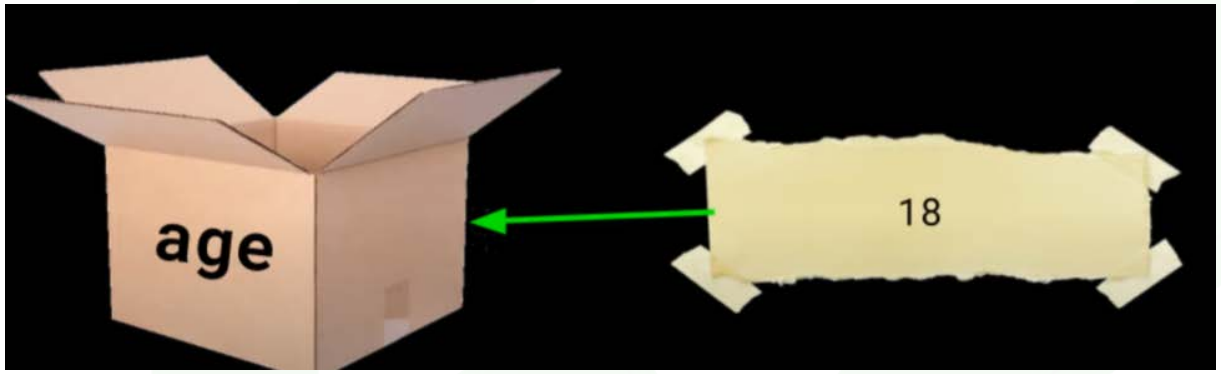


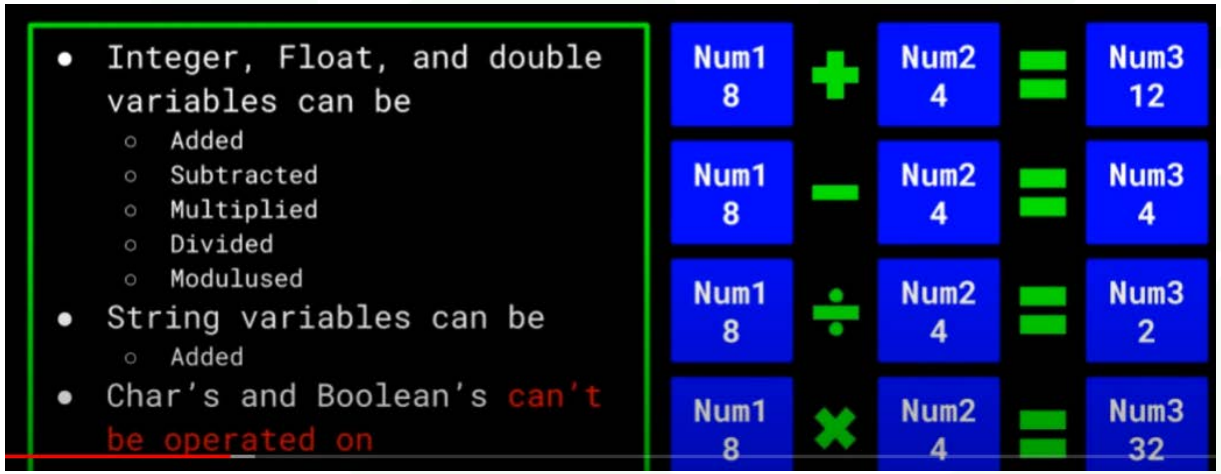


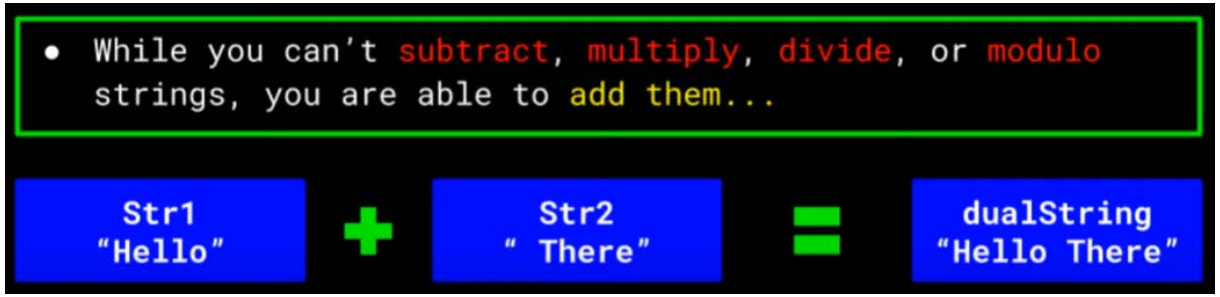


Variables

- Variable değişmek
- Yapabileceklerimiz

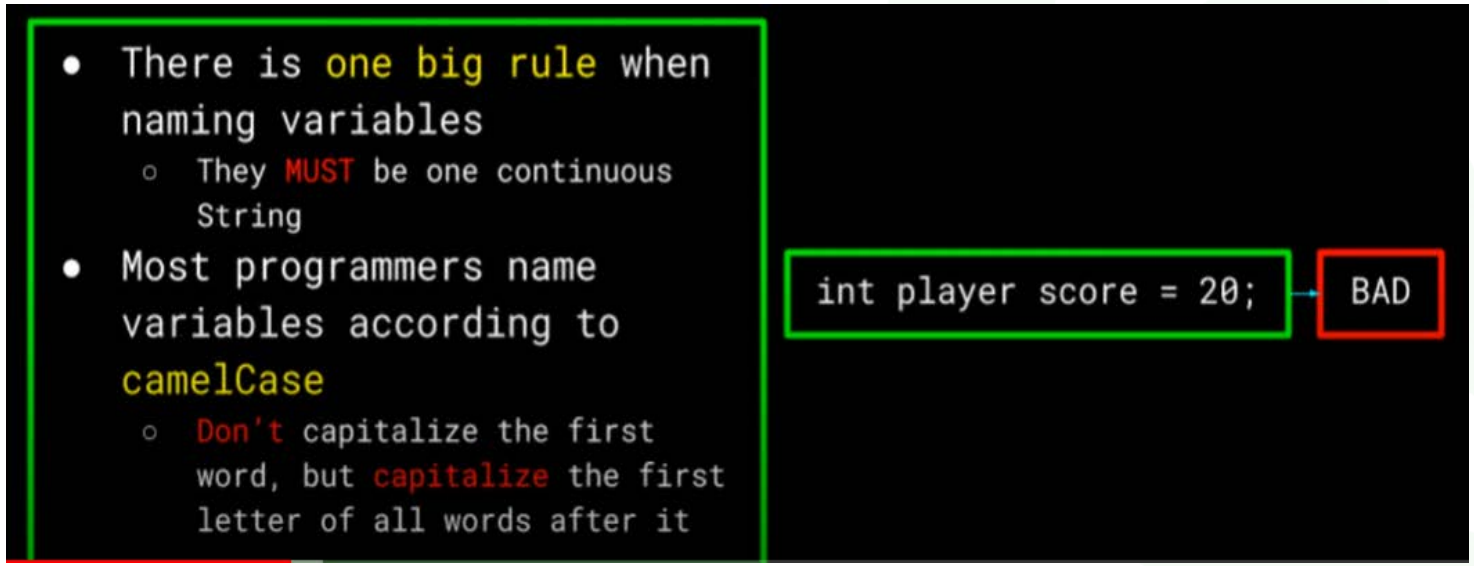






Variables

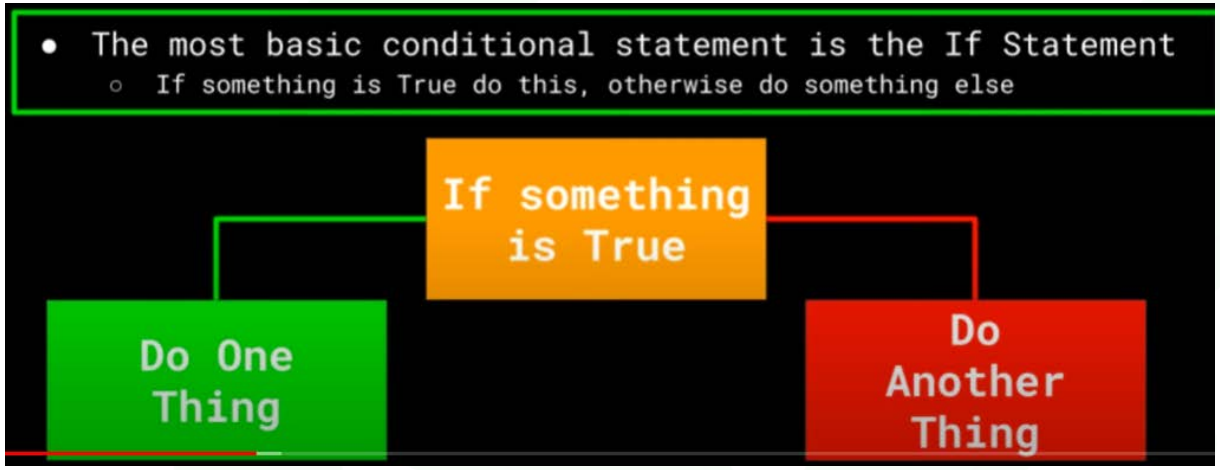
- Variable isimlendirme

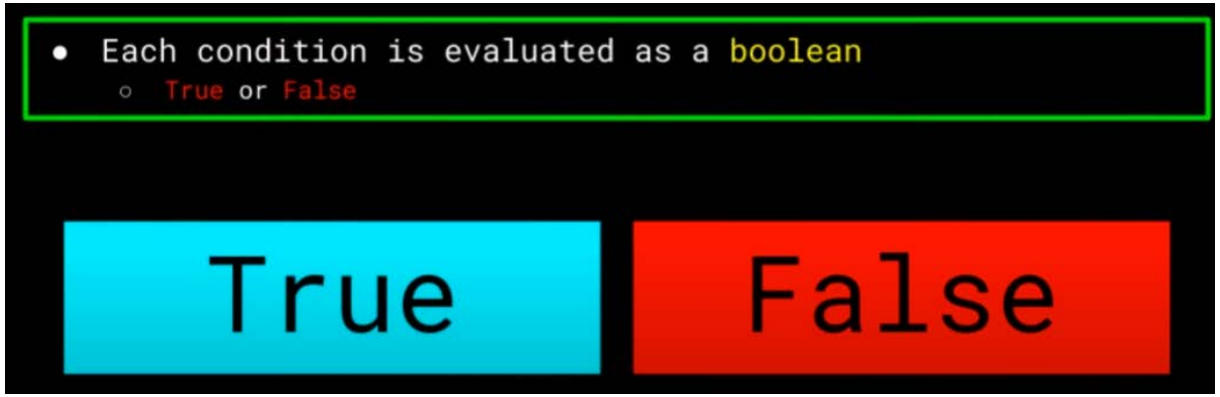


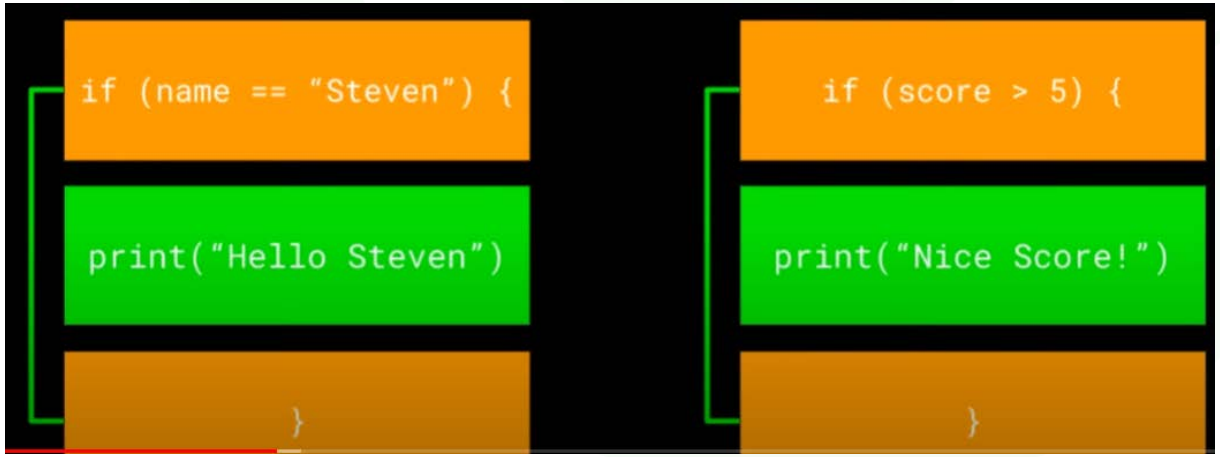
Conditional Statements

- Conditional Statements..

Koşullu İfadeler:

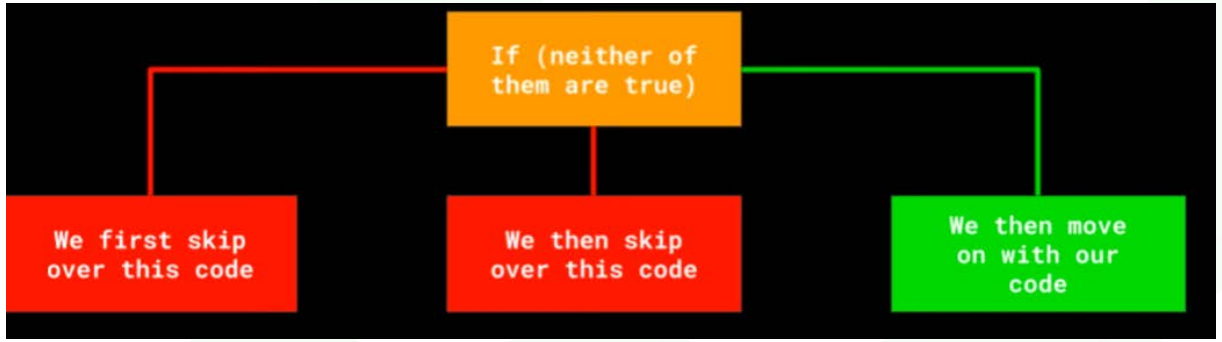


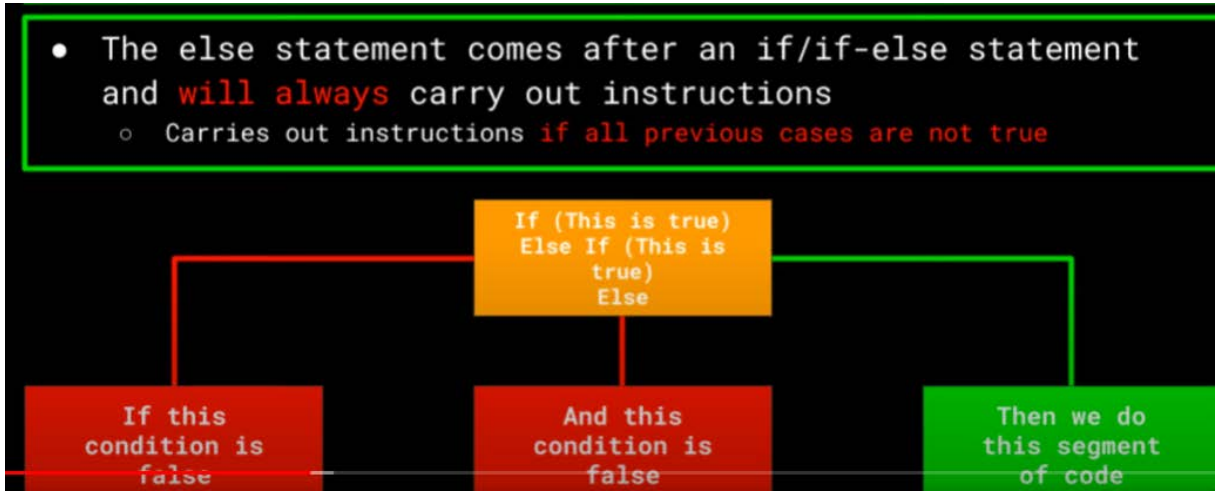


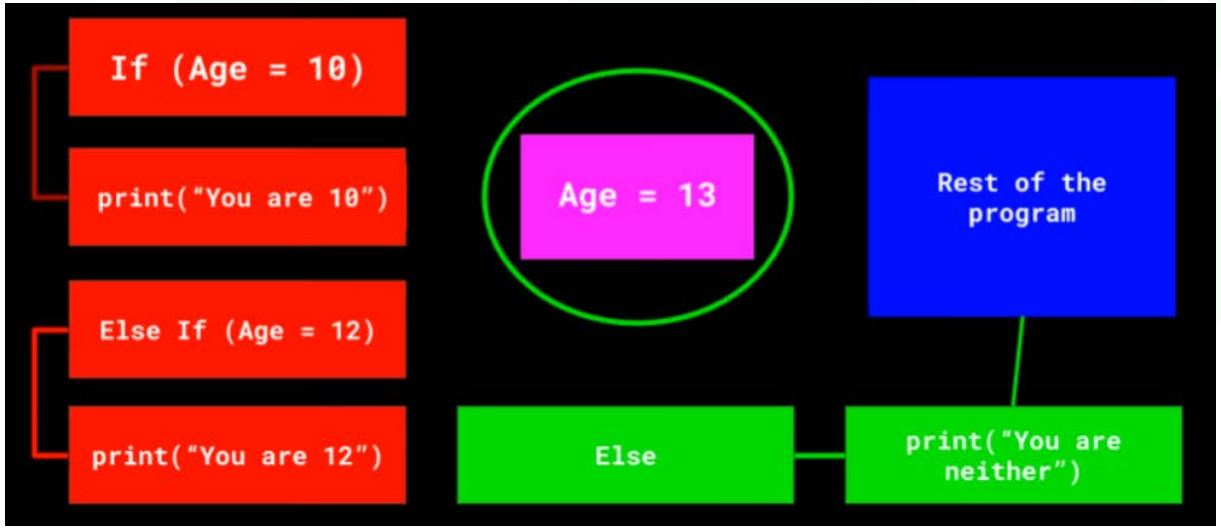


Conditional Statements

- Conditional Statements..
  - Else If..





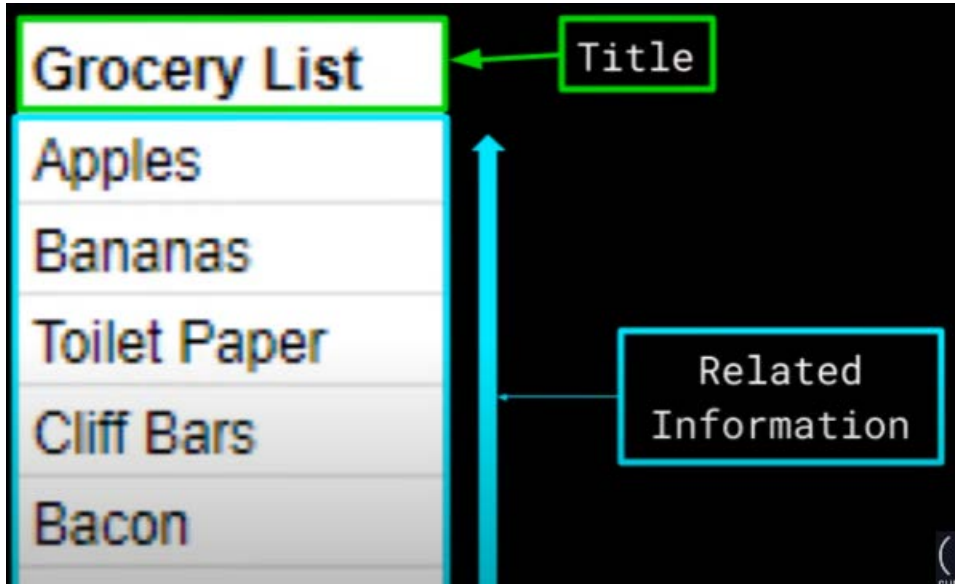


Arrays

- Array ler nedir ?

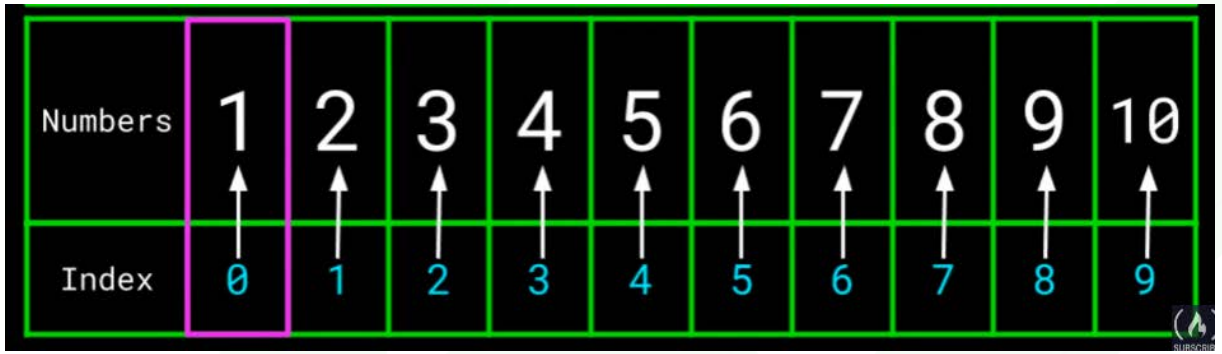
```
String groceryList =
“EggsMilkButterPancakeMixBrown
SugarCinamonMoreEggsMoreMilkMo
reButter”;
```

```
String gr      ryList
“EggsMilkB          keMixBrown
SugarCinam          MoreMilkMo
reButter”
```



Arrays

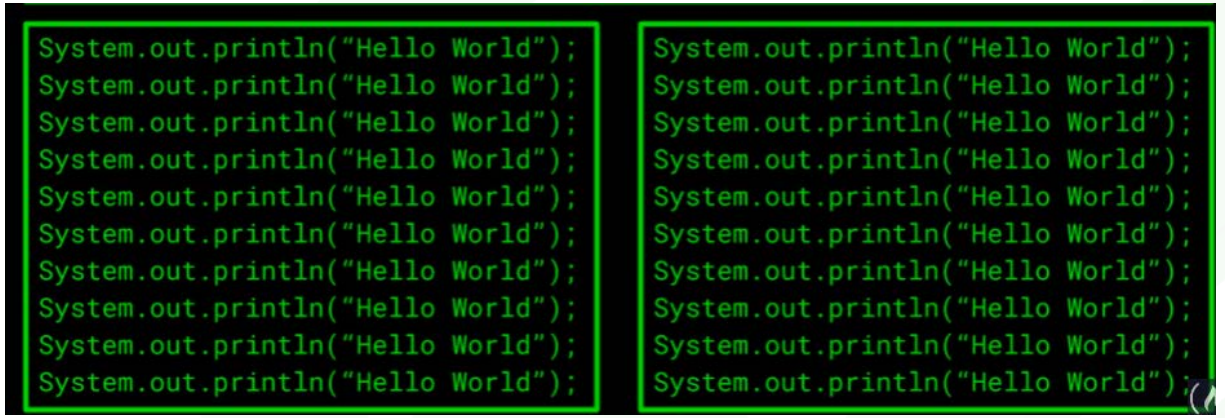
- Array ler neden kullanılır ?

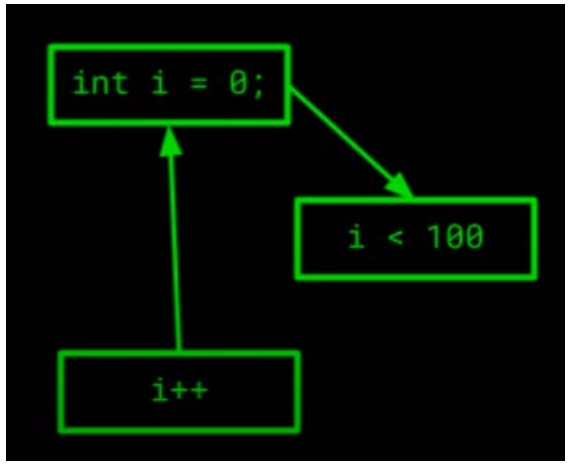


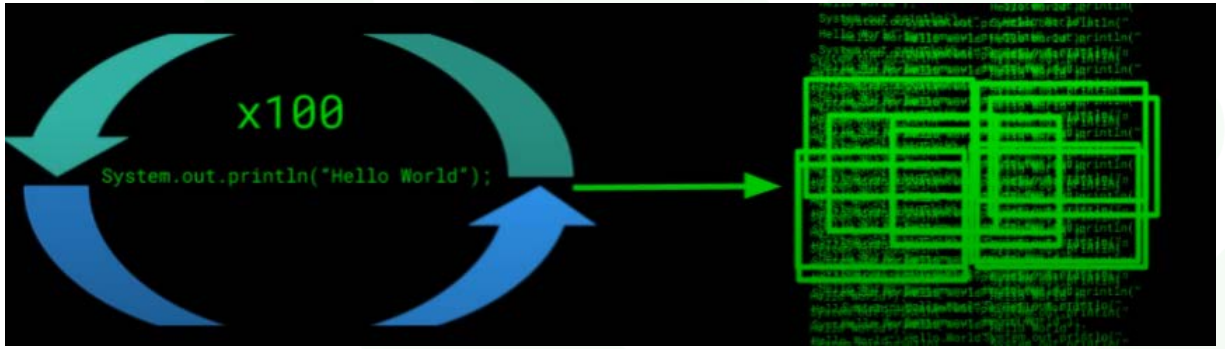
Index	0	1	2	3
0	Ayton	Alex	Arnold	Ashton
1	Bob	Ben	Bryan	Billy
2	Clint	Chris	Colton	Cal
3	David	Doug	Drew	Dan

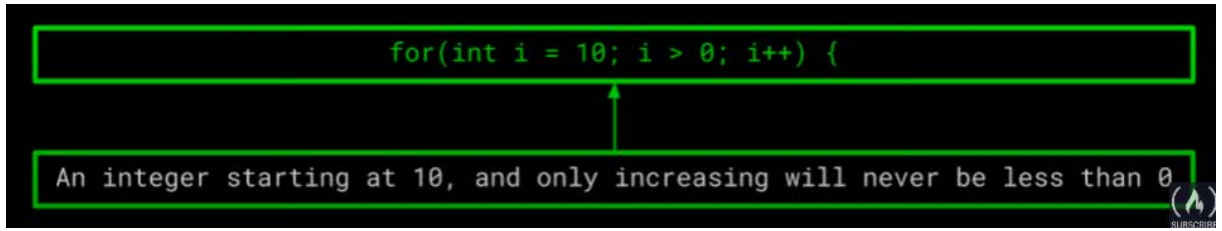
LOOP’s.. Döngüler..

- **For Loop** (For Döngüsü)



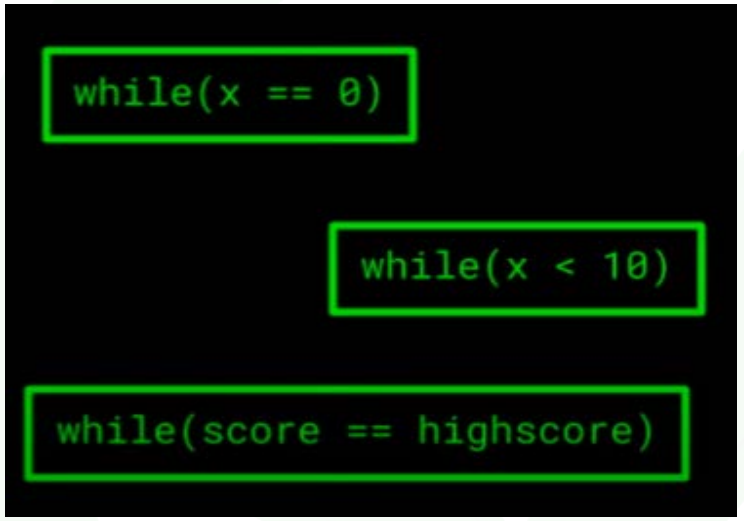




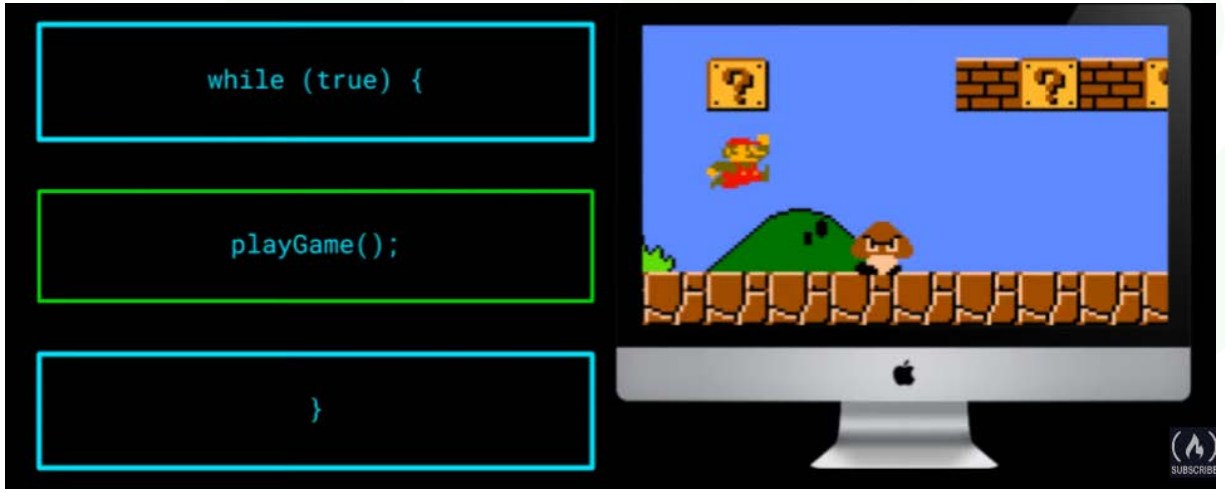


LOOP’s.. Döngüler..

- While Loop

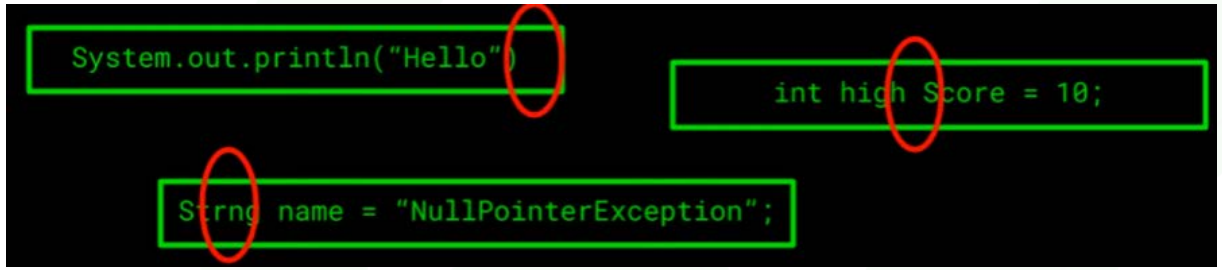


- Do-While Loop



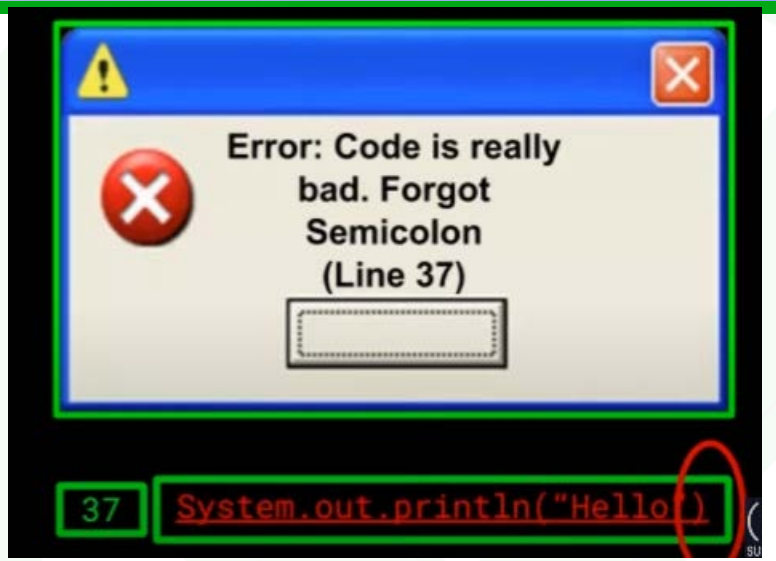
Errors..

- Error Nedir ?
  - Syntax Error
  - Runtime Error
  - Logic Error



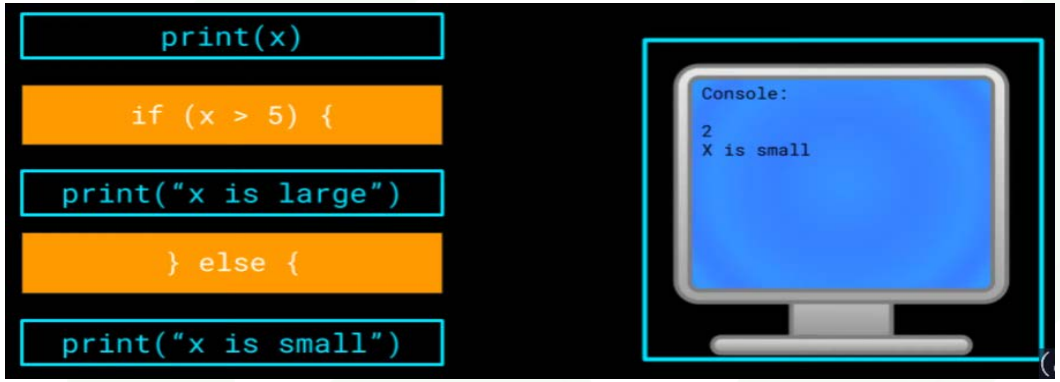
Code Debug (Hata Ayıklama)

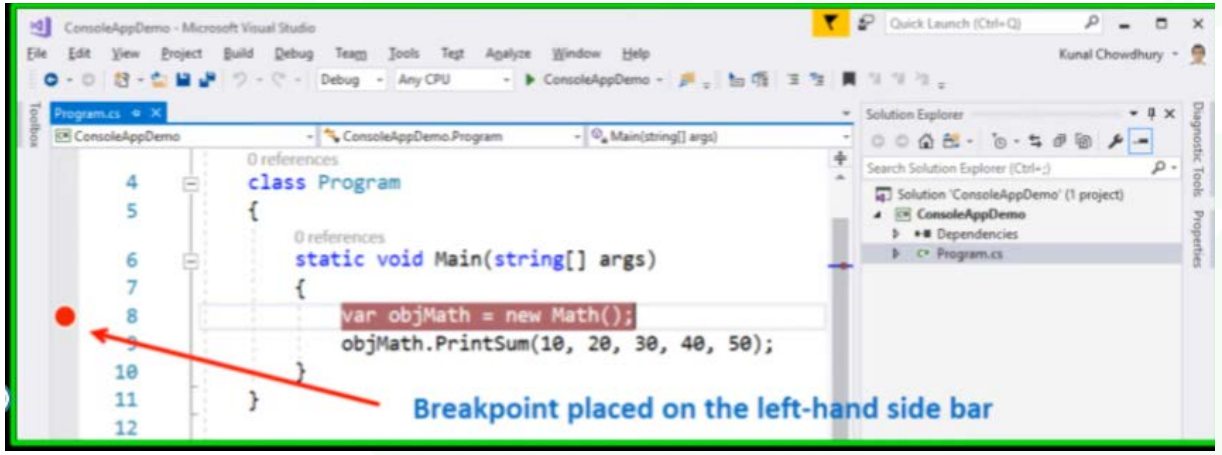
- Code Debug (Hata Ayıklama) nasıl olacak ?



Code Debug (Hata Ayıklama)

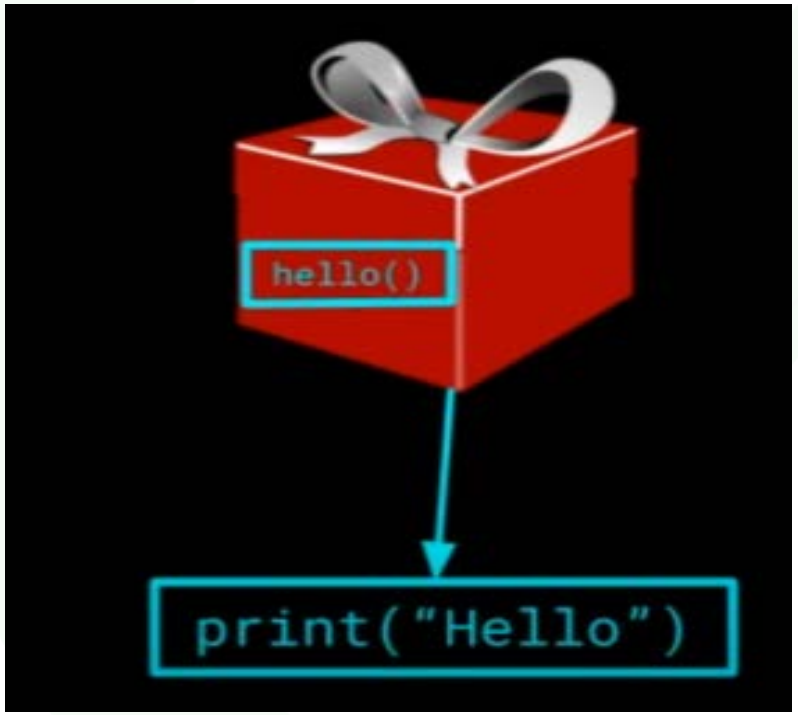
- Code Debug (Hata Ayıklama) nasıl olacak ?





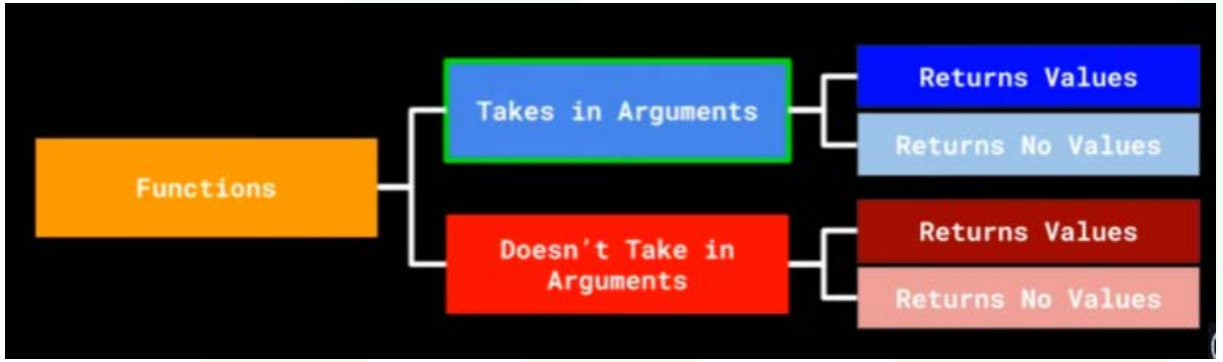
FUNCTIONS

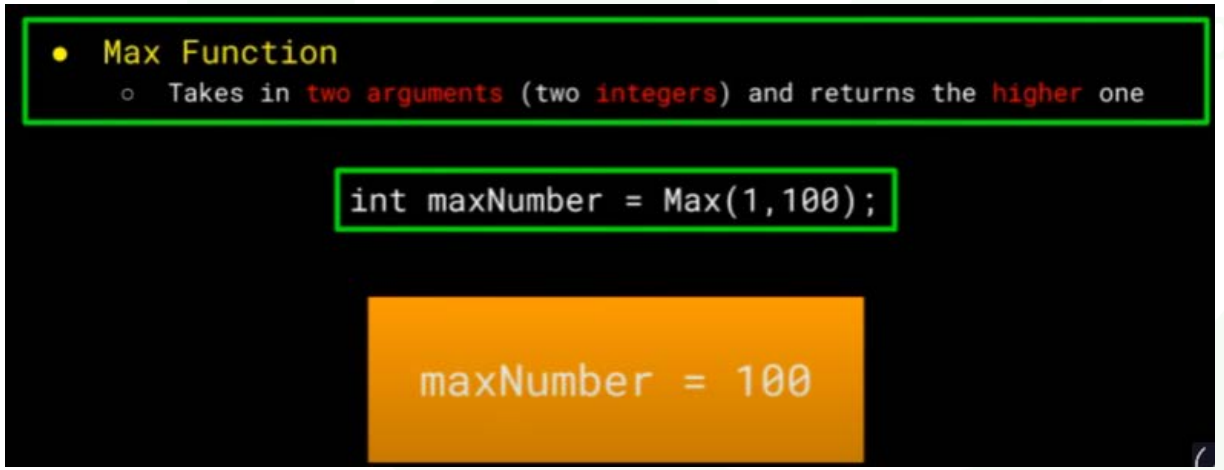
- Fonksiyonlar nedir ?
- Nasıl kullanılır ?

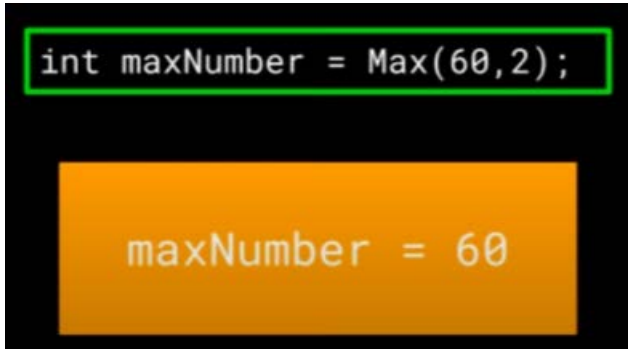


FUNCTIONS

- Functions 4 çeşittir.
- Arguments

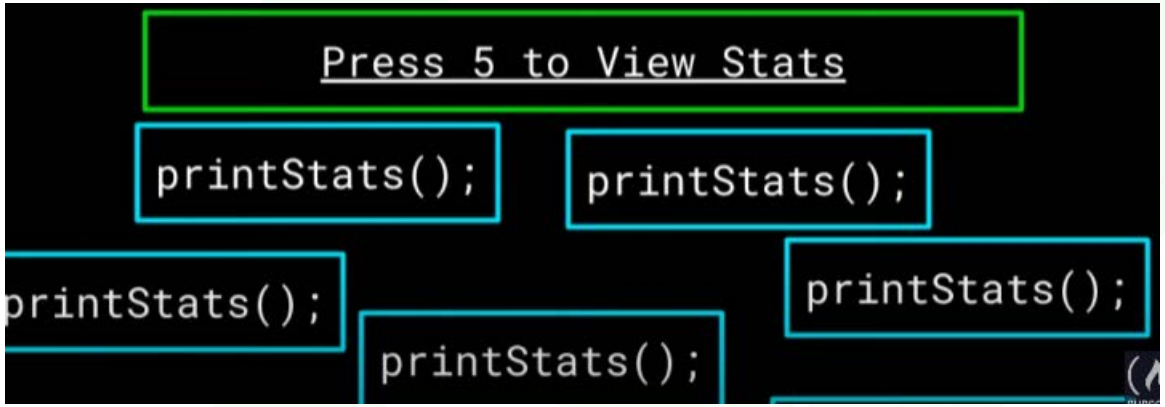


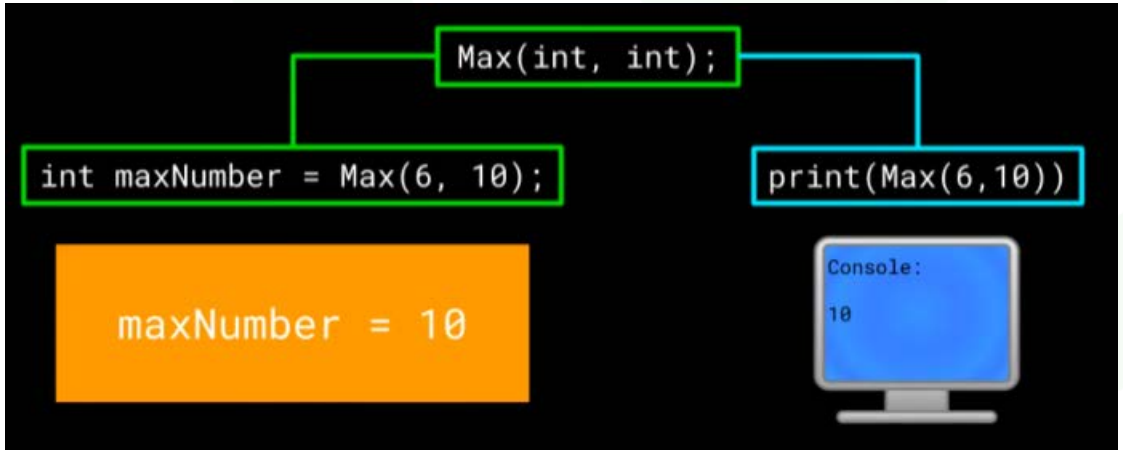




FUNCTIONS

- Arguments





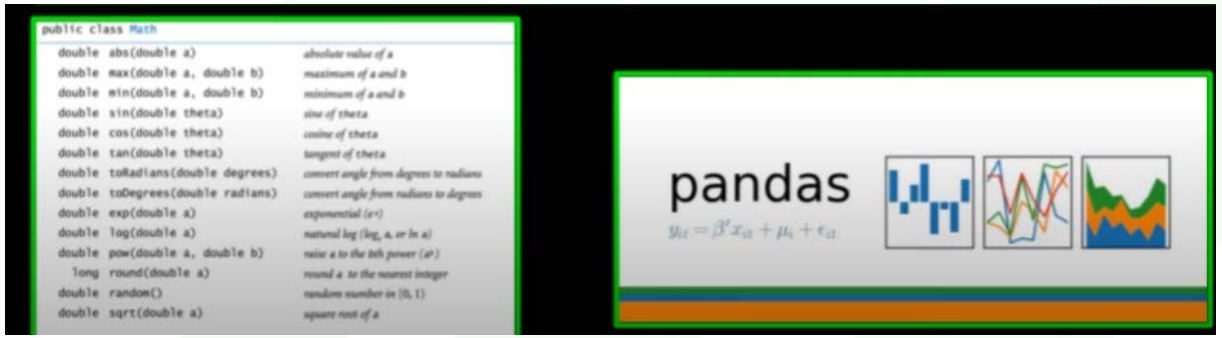
FUNCTIONS

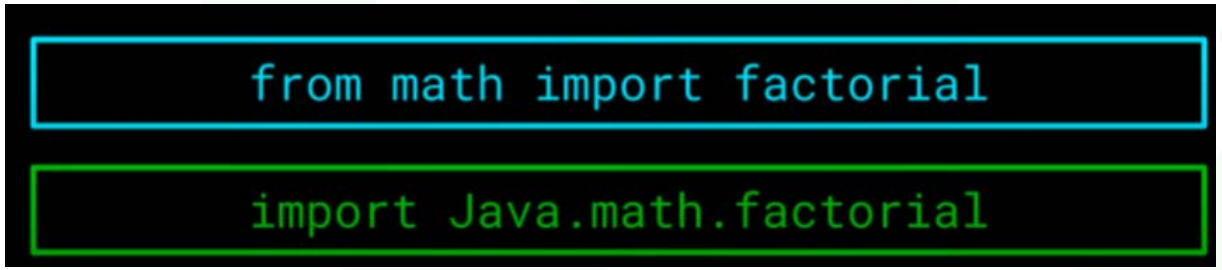
- Functions nasıl Import

  Edilir ?

FUNCTIONS

- **Functions nasıl Import Edilir ?**





FUNCTIONS

- **Kendi**

  Fonksiyonumuzu

  yazabilir miyiz ?

Örnek

```
def toplama(a,b):
    return a+b

sonuc = toplama(10,20)
print(sonuc) # 30
```

```
Public void productCalculator(int num1, num2) {
        System.out.println(num1 * num2);
                }
```

```
productCalculator(5, 8);
```

Array ve Dictionaries

- Array

- Arrays
  - Lists of similar values that are stored together
  - Fixed Size (Cannot be increased)
  - Reference values using an index which starts at 0

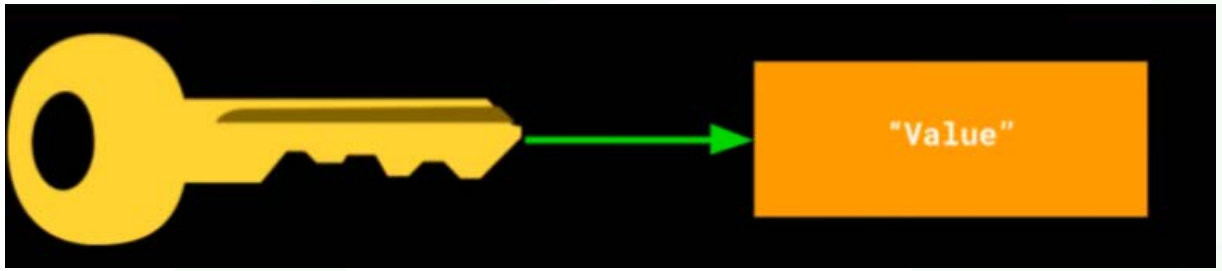
Numbers	1	2	3	4	5	6	7	8	9	10
Index	0	1	2	3	4	5	6	7	8	9

- 2 Dimensional Arrays
  - An array containing an array in each of its indexes
  - Referenced using [Row, Column]

Index	0	1	2	3
0	Ayton	Alex	Arnold	Ashton
1	Bob	Ben	Bryan	Billy
2	Clint	Chris	Colton	Cal
3	David	Doug	Drew	Dan

Array ve Dictionaries

- Dictionaries

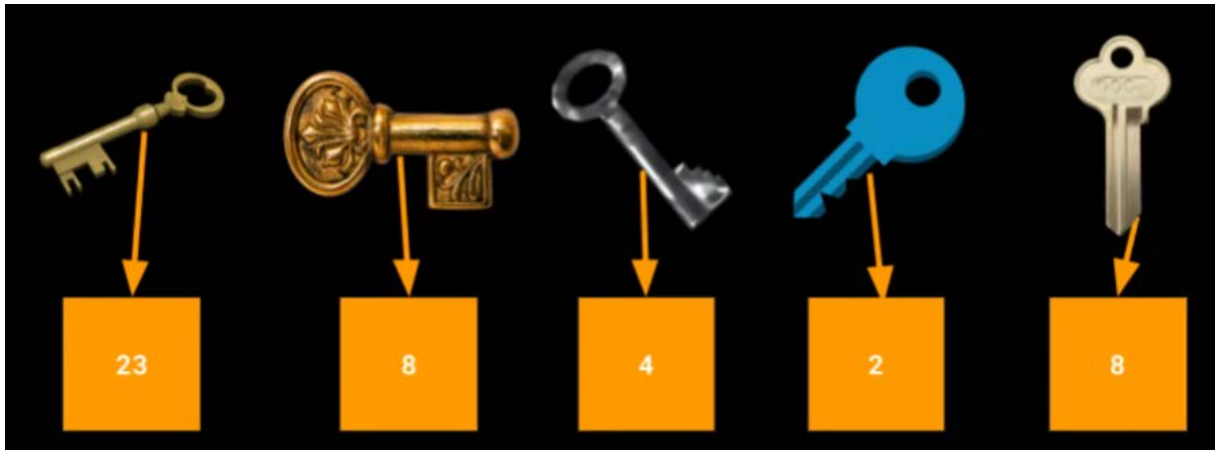



```
fiyatlar = {
  "0001-Lenovo":5000,
  "0002-Acer":3500,
  "0003-HP":5500
} # fiyatlar sözlüğümüzü oluşturuyoruz
```

```
fiyatlar.keys()

fiyatlar.items()

fiyatlar.values()
```




```
ogrenci = {
  "numara": "120",
  "ad": "Ahmet",
  "soyad": "Yılmaz"
}

print(ogrenci)  # { "numara": "120", "ad": "Ahmet", "soyad": "Yılmaz" }
```

Hangi Dil ?

- HTML and CSS
  - Used for web development
- HTML
  - A markup language used for writing the content of a website
- CSS
  - Used to design the style of a website

- General Purpose Languages
  - Offer a wide variety of uses and applications
  - Very good basic languages