CPE101 Programming Languages I

Week 3
Decision Structures

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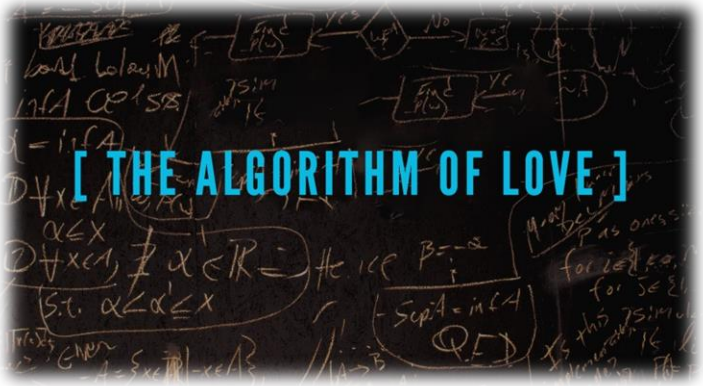
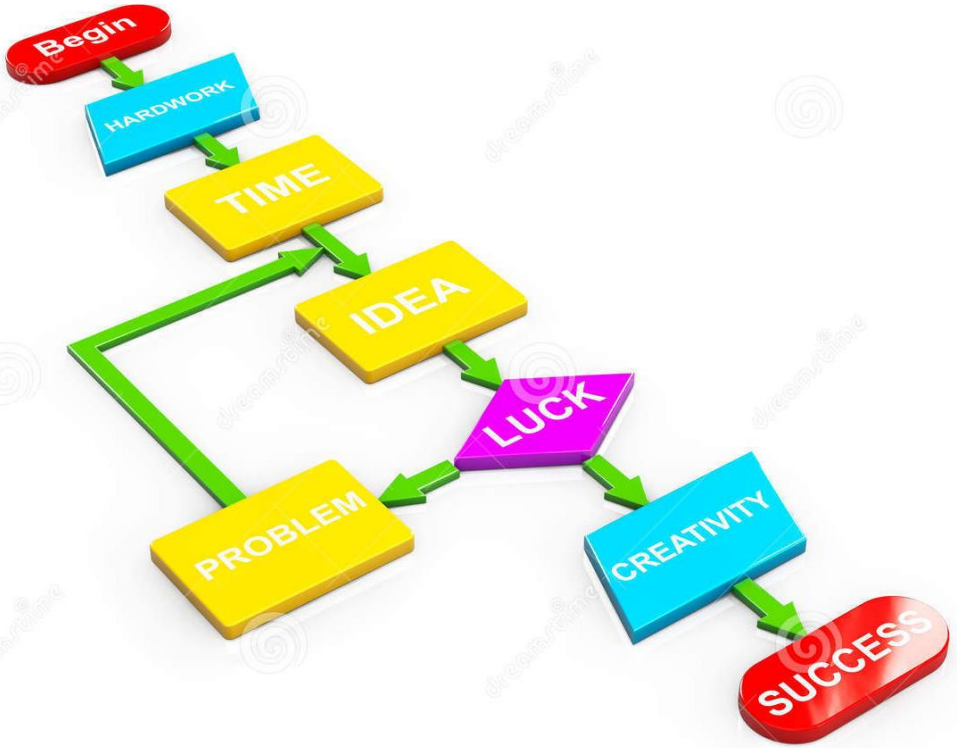
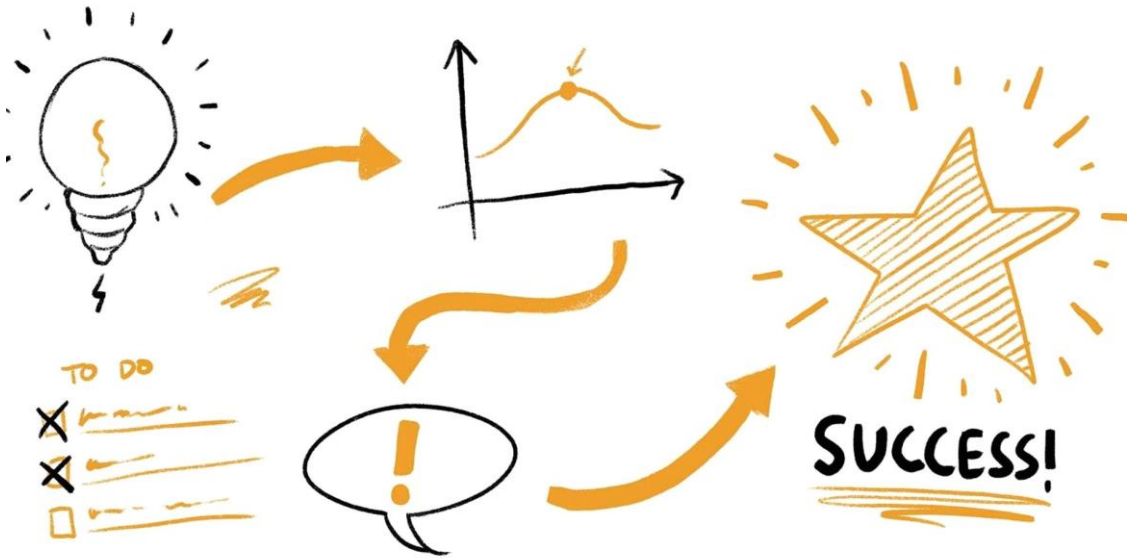
Algorithm

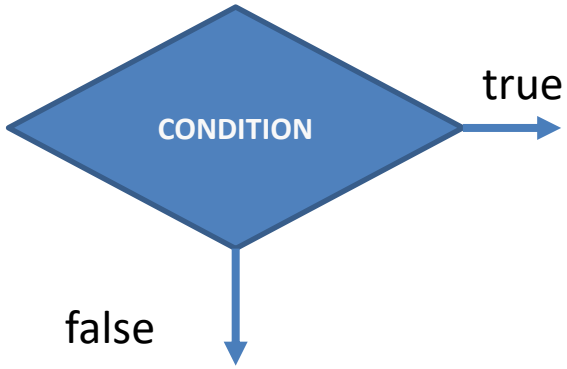

[THE ALGORITHM OF LOVE]


Begin
HARDWORK
TIME
IDEA
LUCK
PROBLEM
CREATIVITY
SUCCESS


TO DO
SUCCESS!

Decision Structures

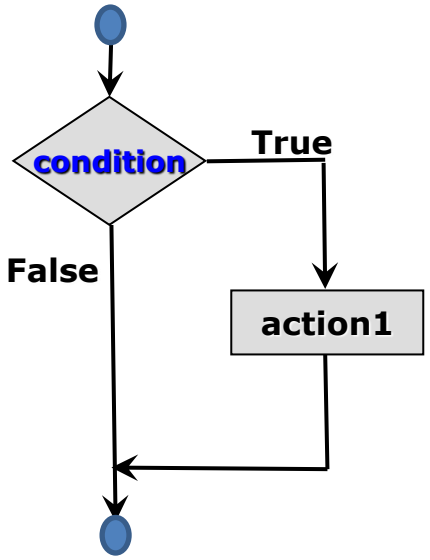
- The **diamond symbol** also called the **decision symbol** which indicates that a decision is to be made is one of the most important flowcharting symbol.
- The decision symbol contains an **expression** such as a **condition** that can be either **true** or **false**.
- The decision symbol has two flowlines emerging from it. One indicates the direction to be taken when the expression in the symbol is true; the other indicates the direction to be taken when the expression is false.



Decision Structures (if)

- The if selection statement performs an indicated action only when the condition is true; otherwise the action is skipped.
- Also called single selection.

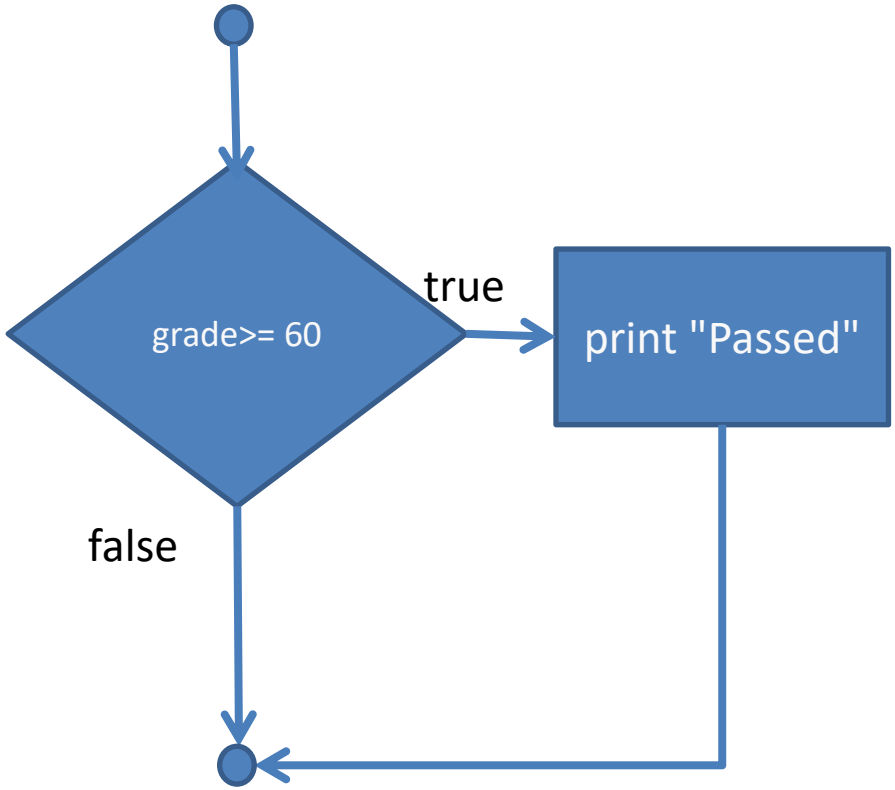
```
if <conditional expression>
    action1;
```



Decision Structures (if)

- Assume that passing grade of a course is 60.
- If we want to print "**Passed**" if the student's grade is greater than or equal to 60 :
- Pseudo code:

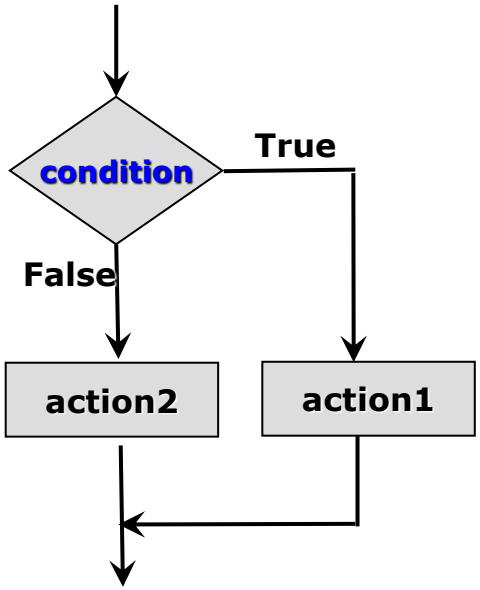
```
if grade >= 60
    print "Passed"
```



Decision Structures (if-else)

- The if..else selection statement allows you to specify that different actions are to be performed when the condition is true than when the condition is false.
- Also called double selection.

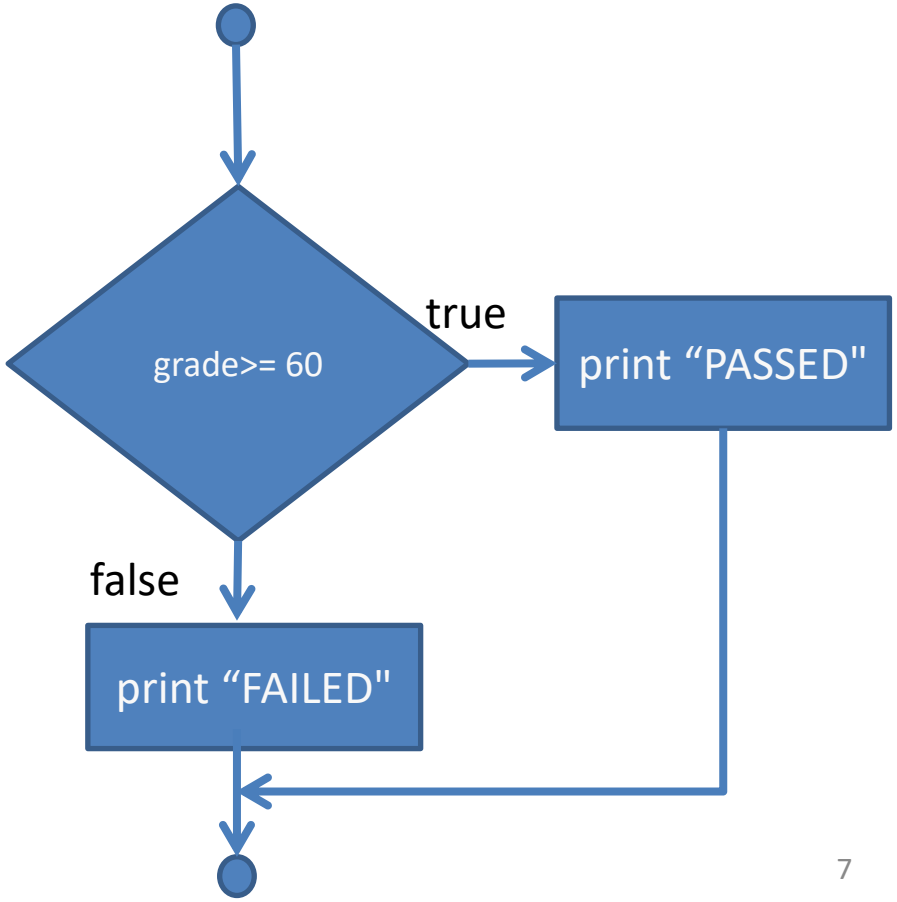
```
if <conditional expression>
        action1;
else
        action2;
```



Decision Structures (if-else)

- If we want to print "**Passed**" if the student's grade is greater than or equal to 60 and print "**Failed**" if the student's grade is less than 60. :
- Pseudo code:

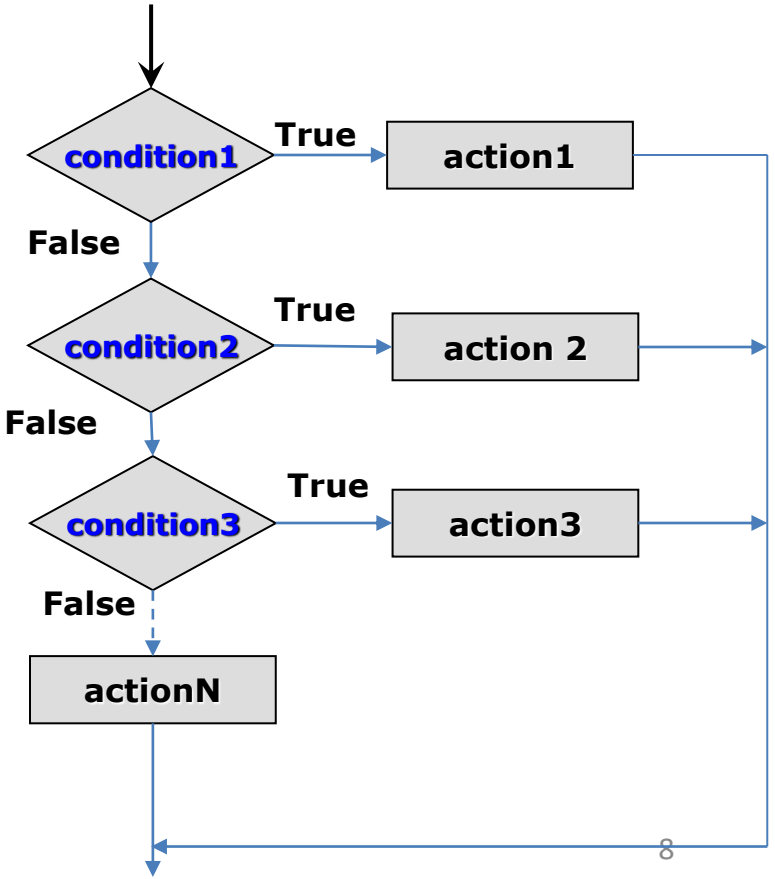
```
if grade >= 60
    print "PASSED"
else
    print "FAILED"
```



Nested if-else Structure

- Sometimes we test for multiple cases by placing if..else statements inside if..else statements

```
if <conditional expression>
        action1;
else if <conditional expression>
        action2;
else if <conditional expression>
        action3;
…….
else
        actionN;
```

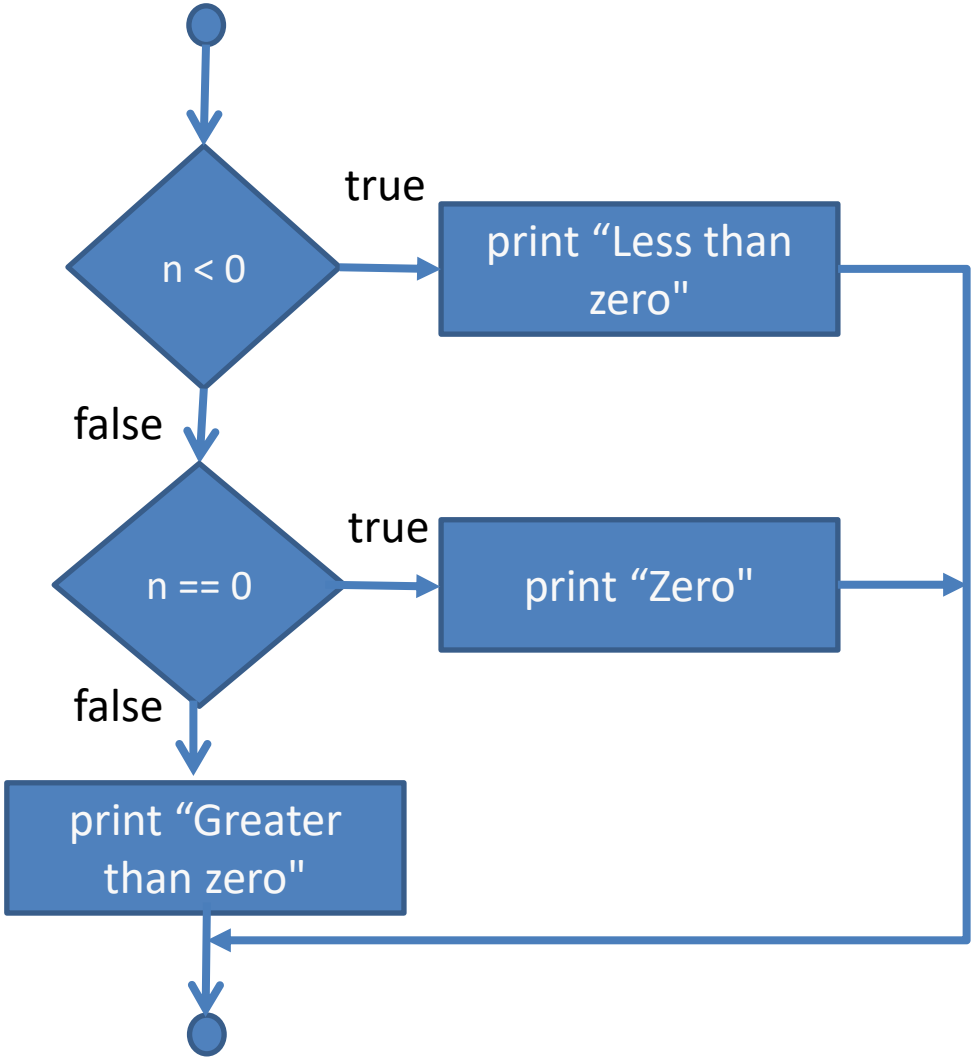


Nested if-else Structure

- For example, we want to test if number n is equal to zero or grater than zero or less than zero.

```
if n < 0
        print "less than zero"
else if n == 0
        print "zero"
else
        print "greater than zero"
```

Nested if-else Structure

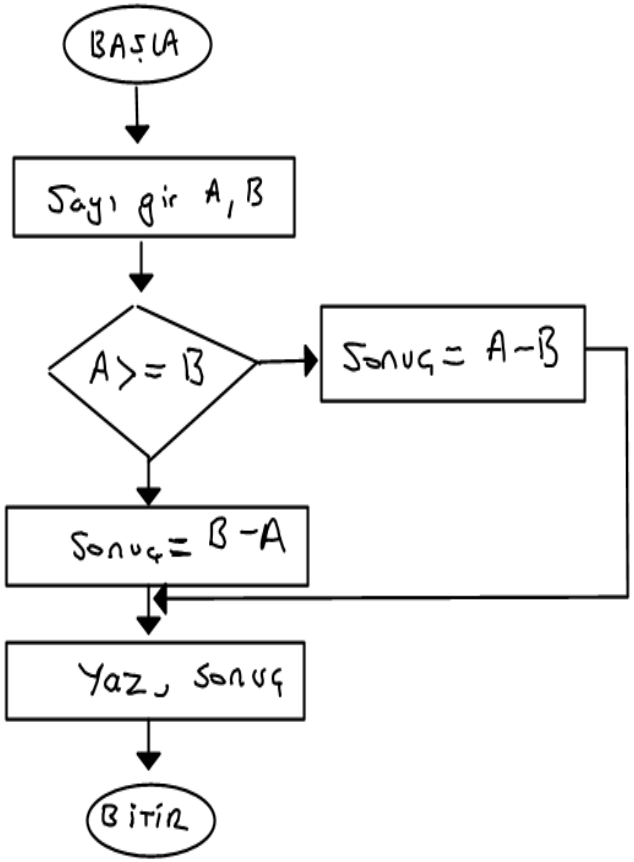


Example 1

- Read two numbers from keyboard and subtract the small number from big one and print result.
  - Pseudo code:

```
Start
Read A,B
if A>=B
        result = A-B
else result = B-A
print result
End
```

Example 1

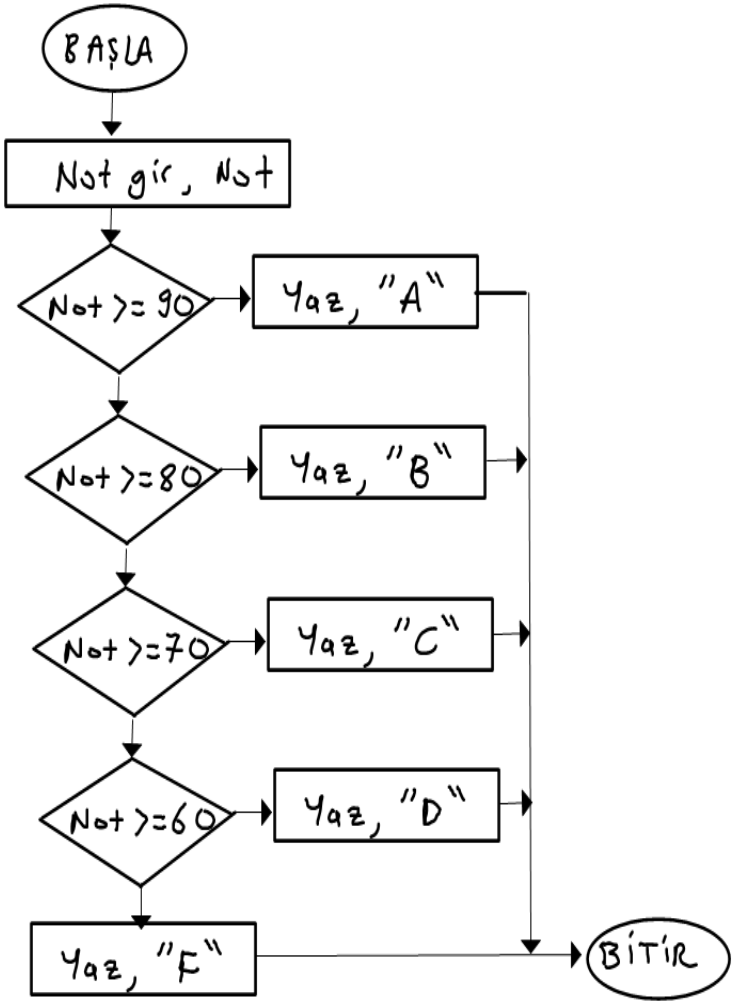


Example 2

- Enter grade from keyboard and convert it into letter form.
  - **Pseudo code:**

```
Start
Read, grade
if grade >= 90
    print "A"
else if grade >= 80
    print "B"
else if grade >= 70
    print "C"
else if grade >= 60
    print "D"
else
    print "F"
End
```

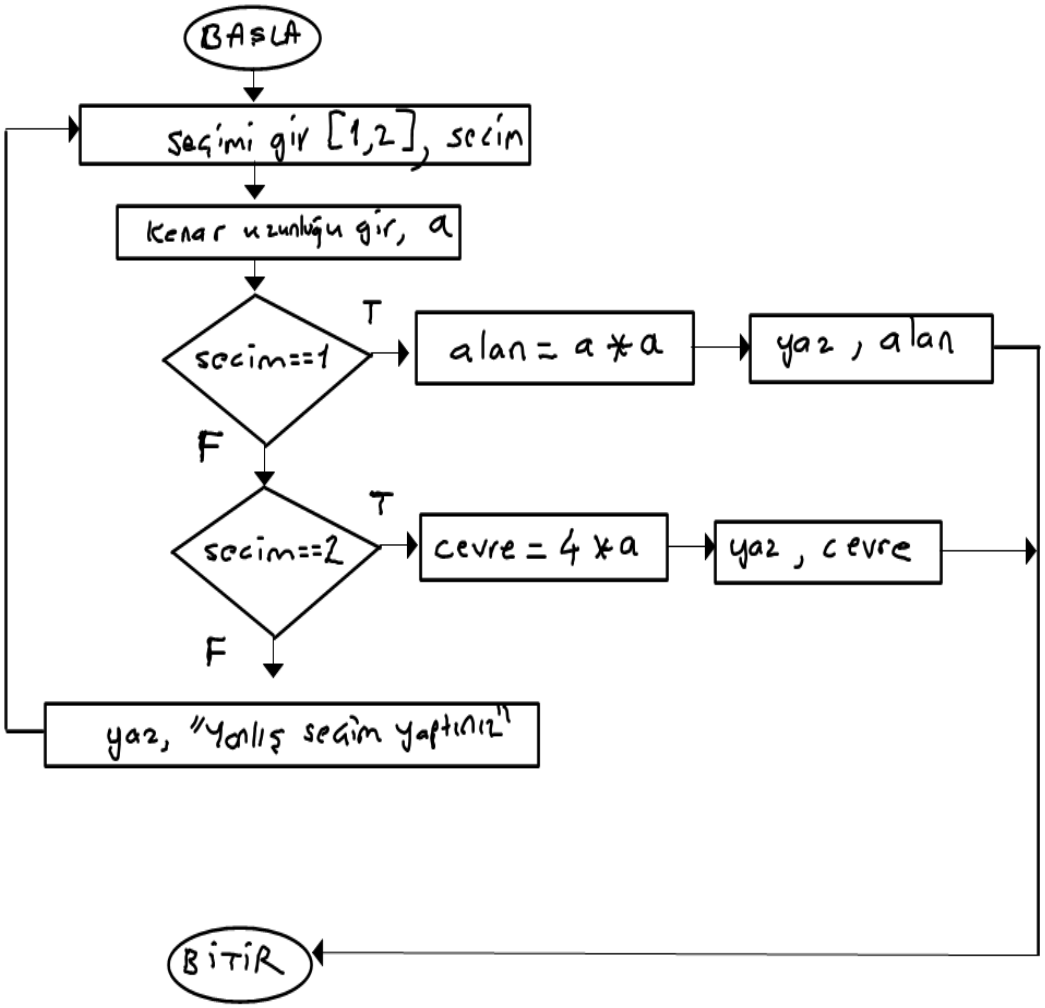
Example 2


BAŞLA
Not gir, Not
Not >= 90
Yaz, "A"
Not >=80
Yaz, "B"
Not >=70
Yaz, "C"
Not >=60
Yaz, "D"
Yaz, "F"
BİTİR

Example 3

- Draw a flowchart of an algorithm that calculates the area of a square when the input value is 1 from keyboard and calculates round measure when the input value is 2. If user puts out of 1 or 2 it will give "Wrong input message".
- The edge length of square is also put from keyboard.

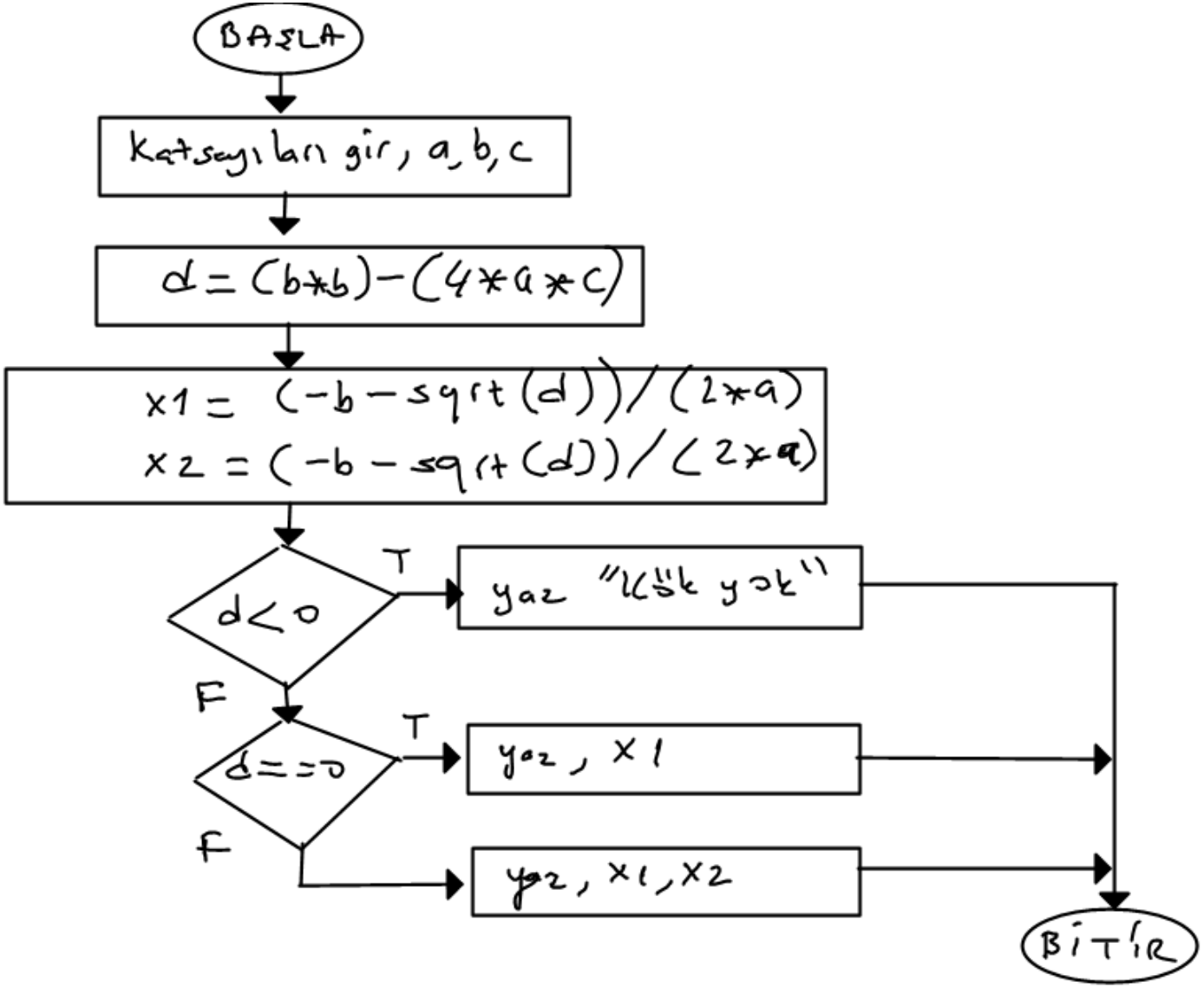
Example 3


BAŞLA
seçimi gir [1,2], secim
kenar uzunluğu gir, a
secim==1
T
alan = a * a
yaz, alan
F
secim==2
T
cevre = 4 * a
yaz, cevre
F
yaz, "Yanlış seçim yaptınız"
BİTİR

Example 4

- Draw flowchart of an algorithm that calculates the roots of a second degree equation so that it's coefficients are put from keyboard.

Example 4

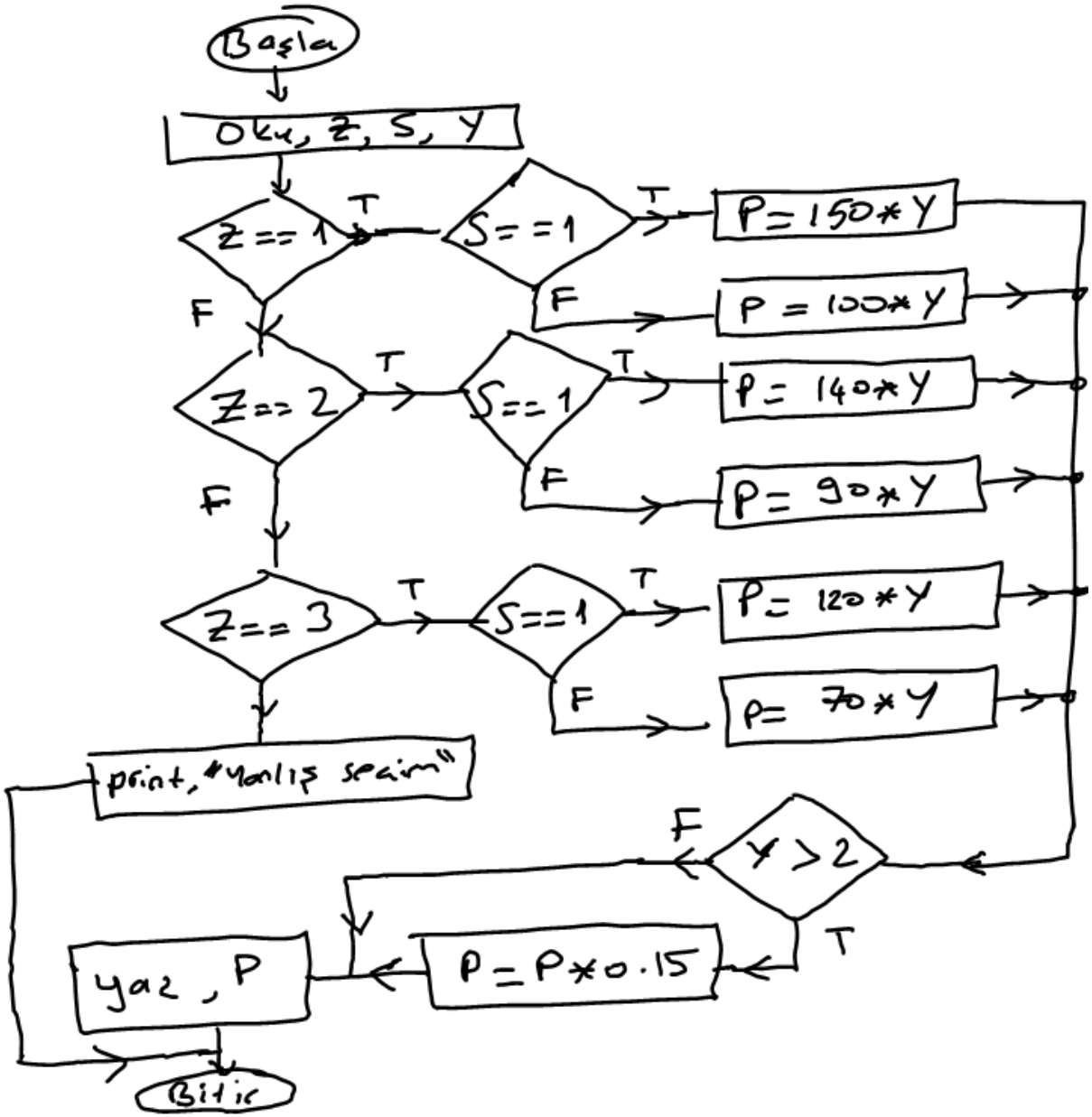

BAŞLA
Katsayıları gir, a, b, c
d = (b*b) - (4*a*c)
x1 = (-b - sqrt(d)) / (2*a)
x2 = (-b - sqrt(d)) / (2*a)
d<0
T
yaz "Kök yok"
F
d==0
T
yaz, x1
f
yaz, x1, x2
BİTİR

Example 5

- Pricing conditions are given for a flight ticket. Draw a flowchart of an algorithm to calculate total price to be paid. Number of passengers will be given from keyboard.

Zaman	Sınıf	Price
1-Morning	1- First Class	150 TL
	2- Economy	100 TL
2-After Noon	1- First Class	140 TL
	2- Economy	90 TL
3-At Night	1- First Class	120 TL
	2- Economy	70 TL
		%15 discount for more than 2 passengers

Example 5


Başla
Oku, Z, S, Y
Z == 1
T
S == 1
T
P = 150 * Y
F
P = 100 * Y
F
Z == 2
T
S == 1
T
P = 140 * Y
F
P = 90 * Y
F
Z == 3
T
S == 1
T
P = 120 * Y
F
P = 70 * Y
print, "Yanlış seçim"
F
Y > 2
T
P = P * 0.15
yaz, P
Bitir

Yazılım Geliştirme > Programlama Dilleri > C

Bu kursu hediye et

C for absolute beginners! Step by step guide...

A complete guide to master C language programming with examples. The best course for learning C programming in 2019

4,0 (30 puan) 9.050 kayıtlı öğrenci

Eğitmen: Beginners Code Camp, Frahaan Hussain Son güncelleme tarihi: 8/2019

İngilizce İngilizce [Otomatik Oluşturulmuş]

Bu kursu 03 Ekim 2019 tarihinde satın aldınız

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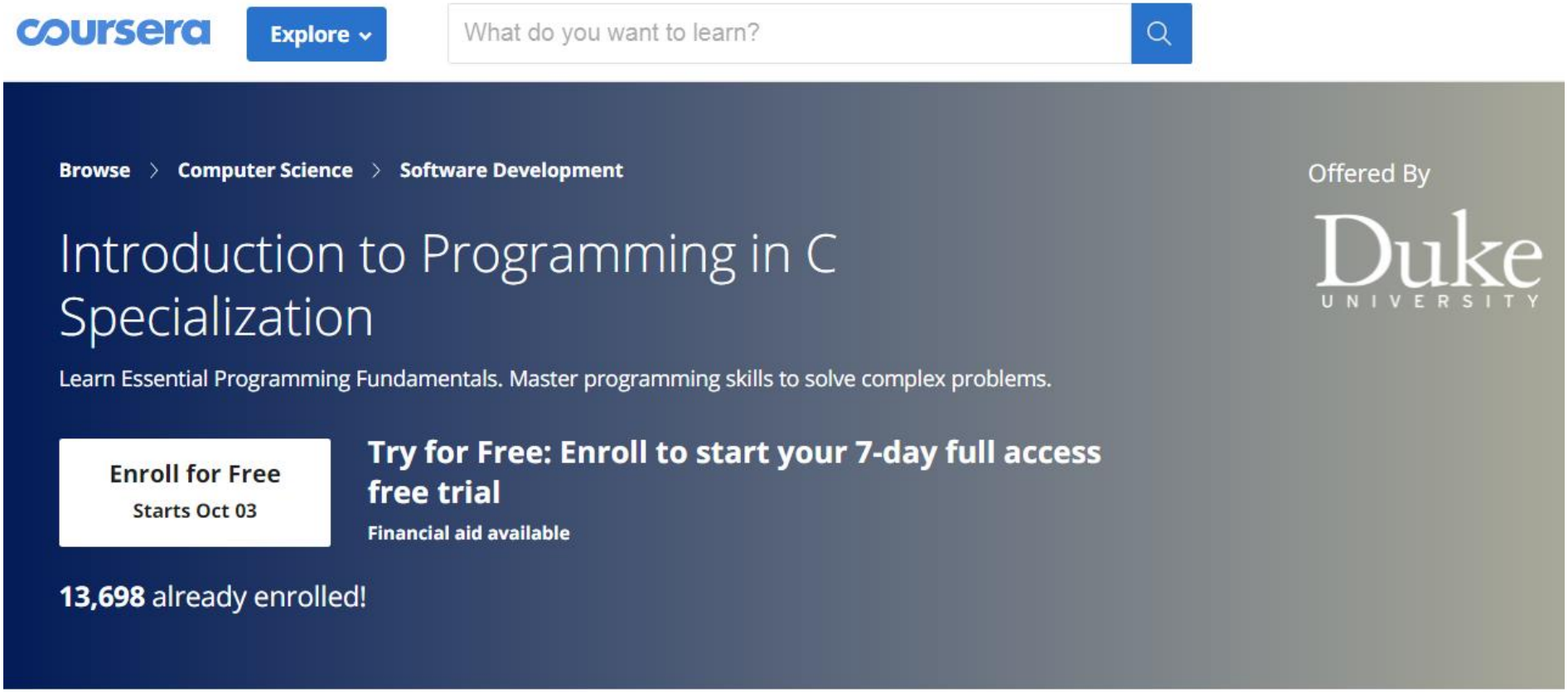
Bu kursun içeriği

Öğrenecekleriniz

- You will download and install Code Block IDE step by step
- You will write codes to understand local and global variables
- You will implement programs to master loop systems such as for loop, while loop
- You will write simple codes that will help you to understand C language Syntax
- You will implement program to master comments in C language
- You will implement programs to master decision statements such as if statement, if else statement, else if statement etc



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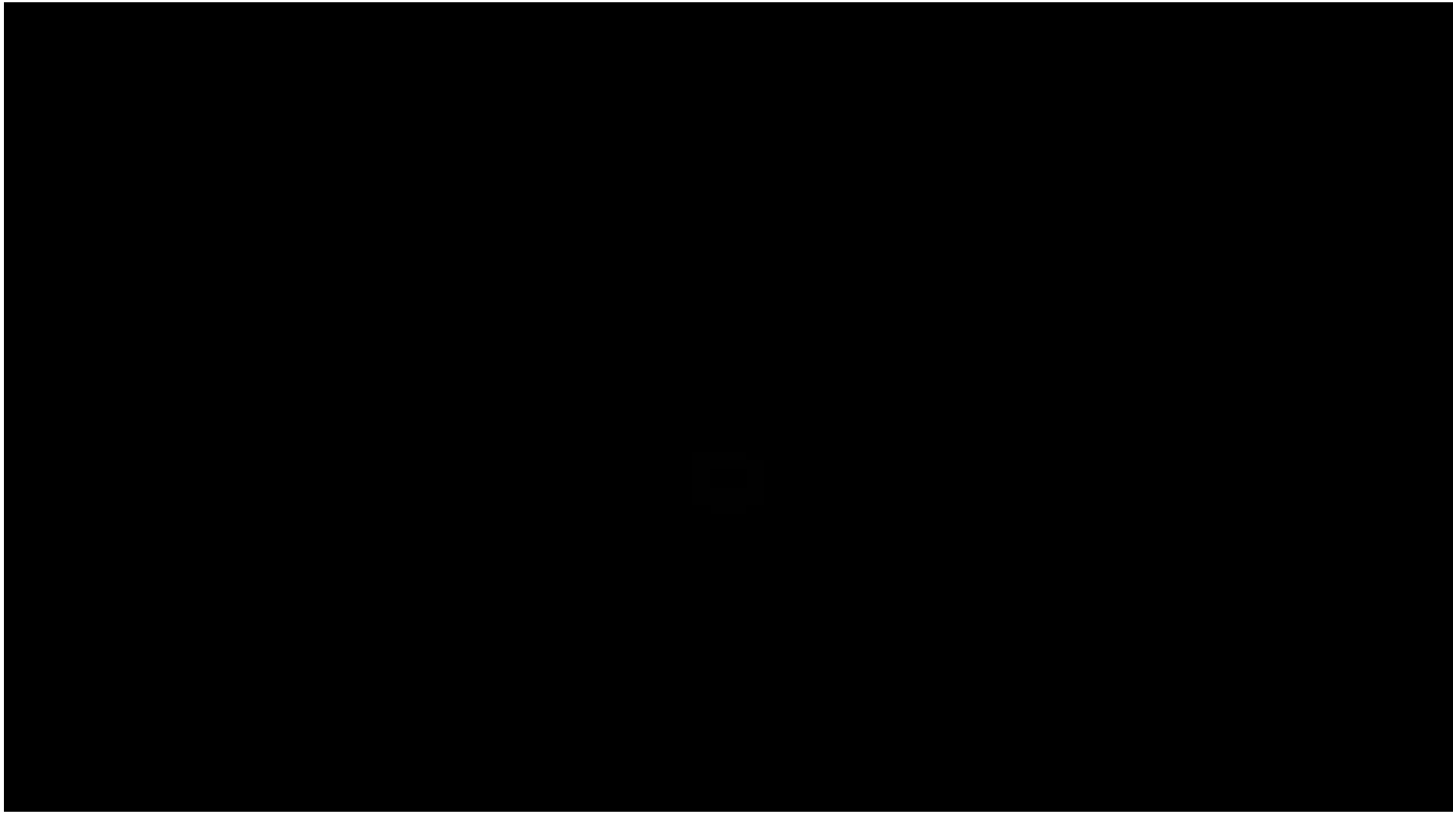

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- Bayram AKGÜL, C Programlama Ders notları