COMPUTER PROGRAMMING I
Introduction To Python

BIL2205

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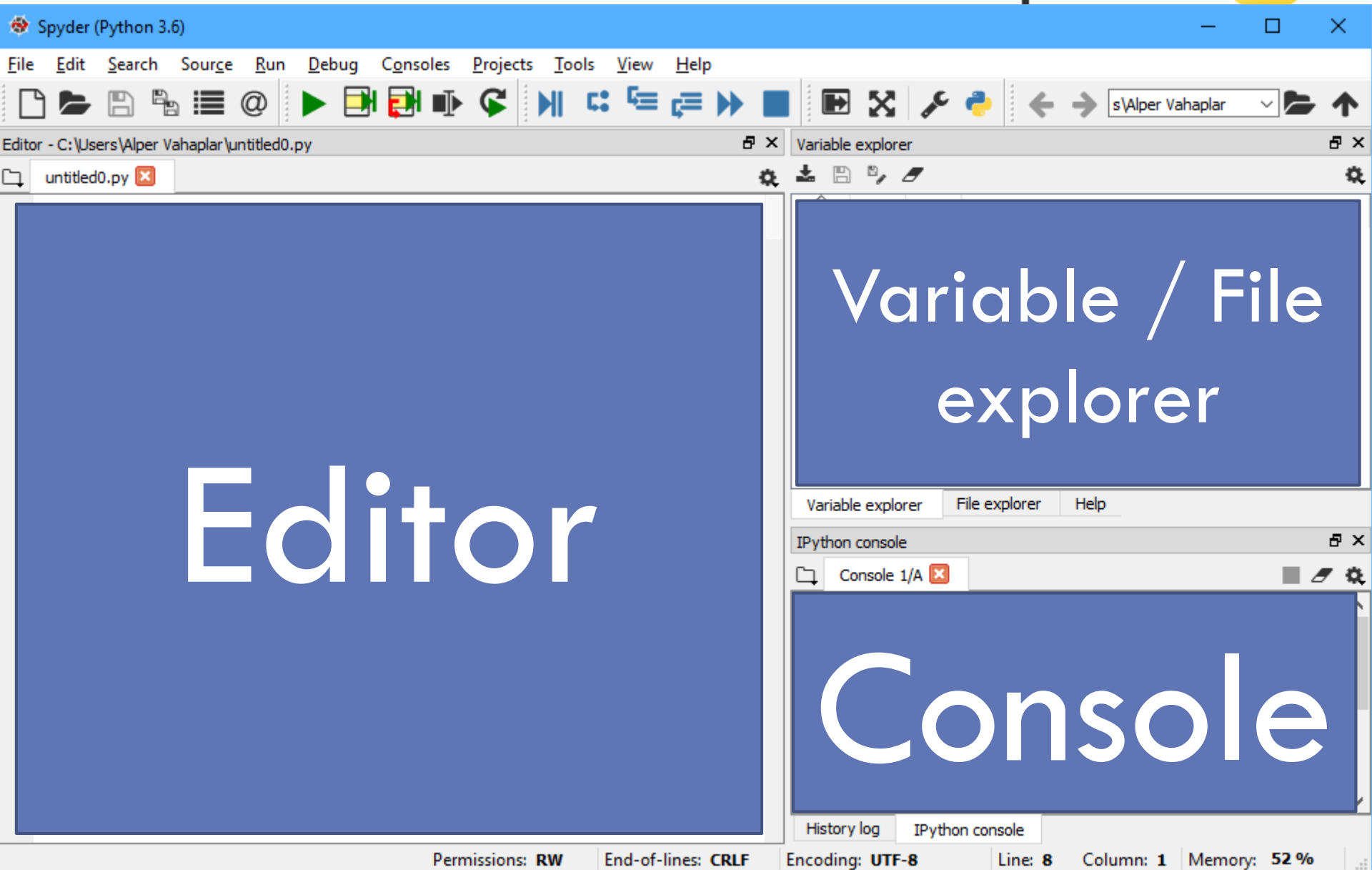
Python Programming Language

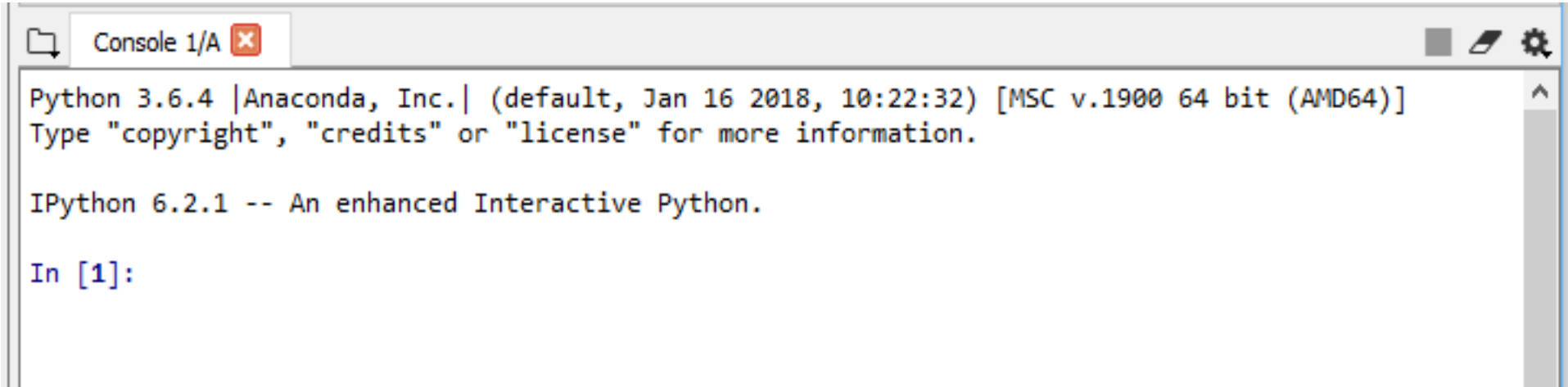
- Python
  - is a **general purpose, interpreted** programming language.
  - is a language that supports multiple approaches to software design, principally **structured** and **object-oriented** programming.
  - provides automatic **memory management** and **garbage collection**.
  - is **extensible**.

Spyder – Python Editor



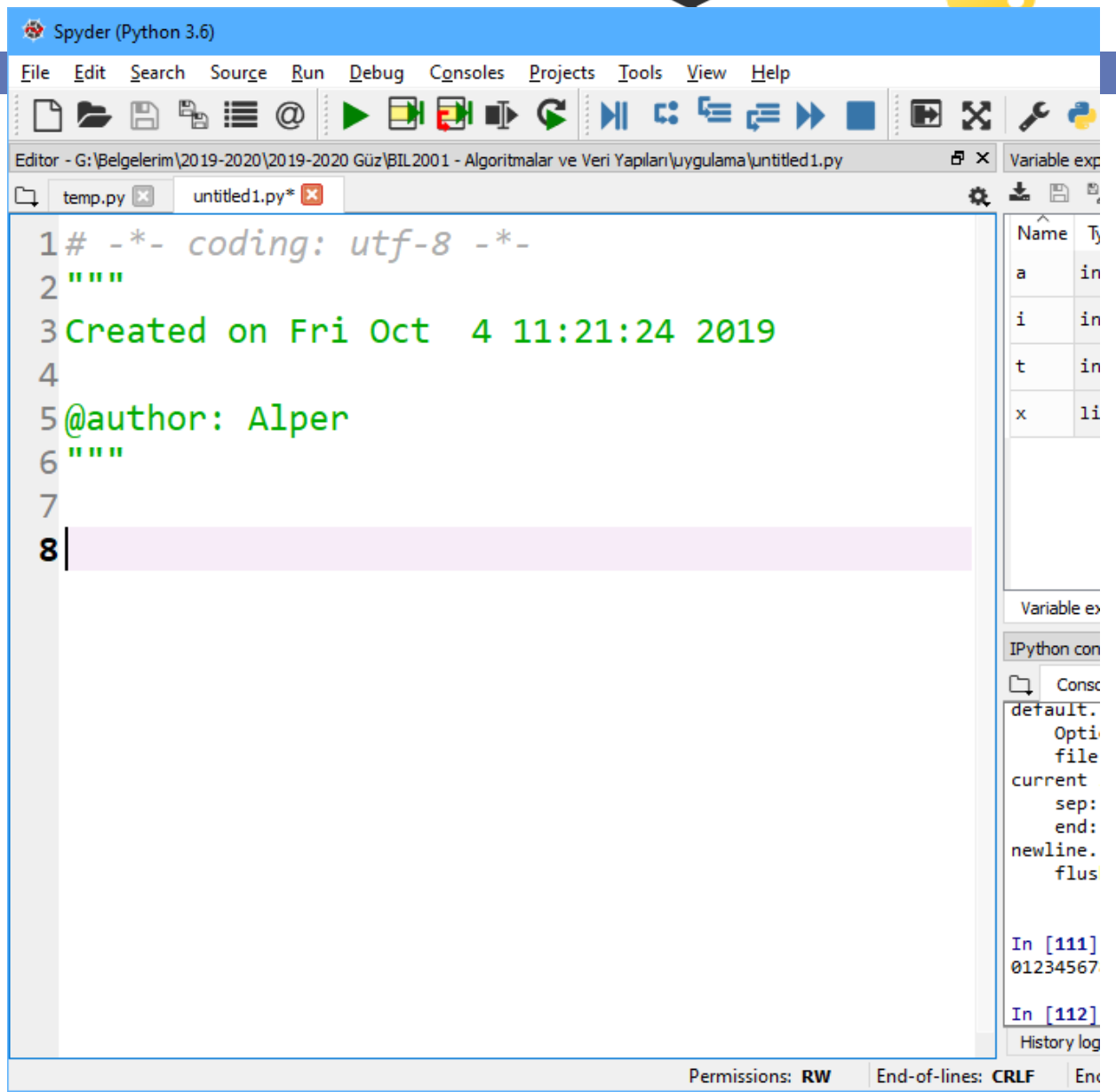
Spyder – Python Editor

- Spyder Console (Ipython)
  - Command Line



Spyder – Python Editor

- Editor



Spyder – Python Editor

- Python Programming
  - Comments: The part of a program that the interpreter (or compiler) will ignore, will not try to convert and execute.

```
1 # -*- coding: utf-8 -*-
2 """
3 Created on Fri Oct  4 11:21:24 2019
4
5 @author: Alper
6 """
7
8 # This is a comment line...
```

Spyder – Python Editor

- Python Programming
  - Comments:
  - # Comment in line
  - """

```
1# -*- coding: utf-8 -*-
2"""
3Created on Fri Oct  4 11:21
4
5@author: Alper
6"""
7
8# This is a comment line...
```

Comment in blocks,

or paragraphs,

or multi-line commenting…

"""

- (''') can salso be used for multiline commenting.

Spyder – Python Editor

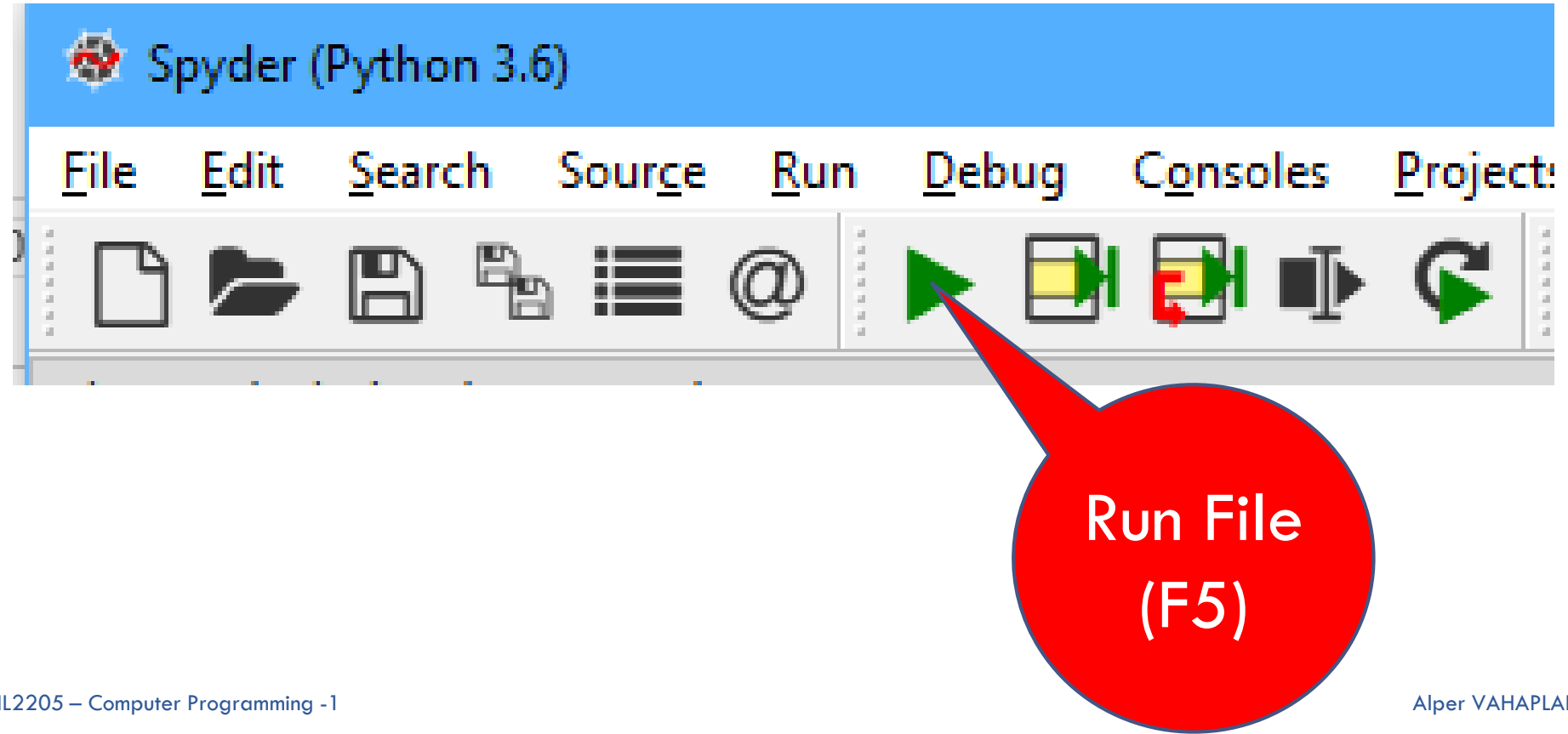
- Python Programming
- `print` command.

```
1 # This is a comment line...
2 # Let's begin with our first
3 # program....
4
5 print ("Hello World")
```

Spyder – Python Editor

- Python Programming
- `print` command.

```
1 # This is a comment line...
2 # Let's begin with our first
3 # program....
4
5 print ("Hello World")
```



Spyder – Python Editor

- Python Programming
- `print` command.
- `print ("Hello World")`
- `print ("Python is fun...")`
- `print ("Hello World", "Python is fun...")`

Spyder – Python Editor

- Python Programming
- Assignment Operator (=)

```
yaş = 35
print (yaş)

isim = 'Alper'
print (isim)
```

Spyder – Python Editor

- Python Programming
- Assignment Operator (=)

```
h = 12
r = 3
volume = 3.14 * r**2 * h
print ("Volume of the cylinder is :",volume)
```

Spyder – Python Editor

- Python Programming
- Assignment Operator (=)

```
isim = "Alper"
doğumyılı = 1985
yaş = 2019 - doğumyılı
print ("Dear",isim,"You're"
       ,yaş,"years old")
```

Spyder – Python Editor

- Calculate "geçme_notu" for given "vize, ödev, final" grades.

```
vize = 72
ödev = 80
final = 55
geçme_notu = vize * 0.4
geçme_notu = geçme_notu + ödev * 0.10
geçme_notu += final * 0.50
print (geçme_notu)
```

Exercises

- Convert 42 mpg to liters/100km
  - 1 Gallon = 3.785411784 Liters
  - 1 Mile = 1.609344 Kilometers
- Calculate the day number of January 1st, 2020.
  - (0 => Sunday, 1=>Monday, … 6 =>Saturday)

Python – Control Structures

- Condition Control
- if condition:

    things to do if condition is true

- Example:

```
if 23 > 45:
    print ("23 is greater than 45")
print ("Out of 'if'...")
```

Python – Control Structures

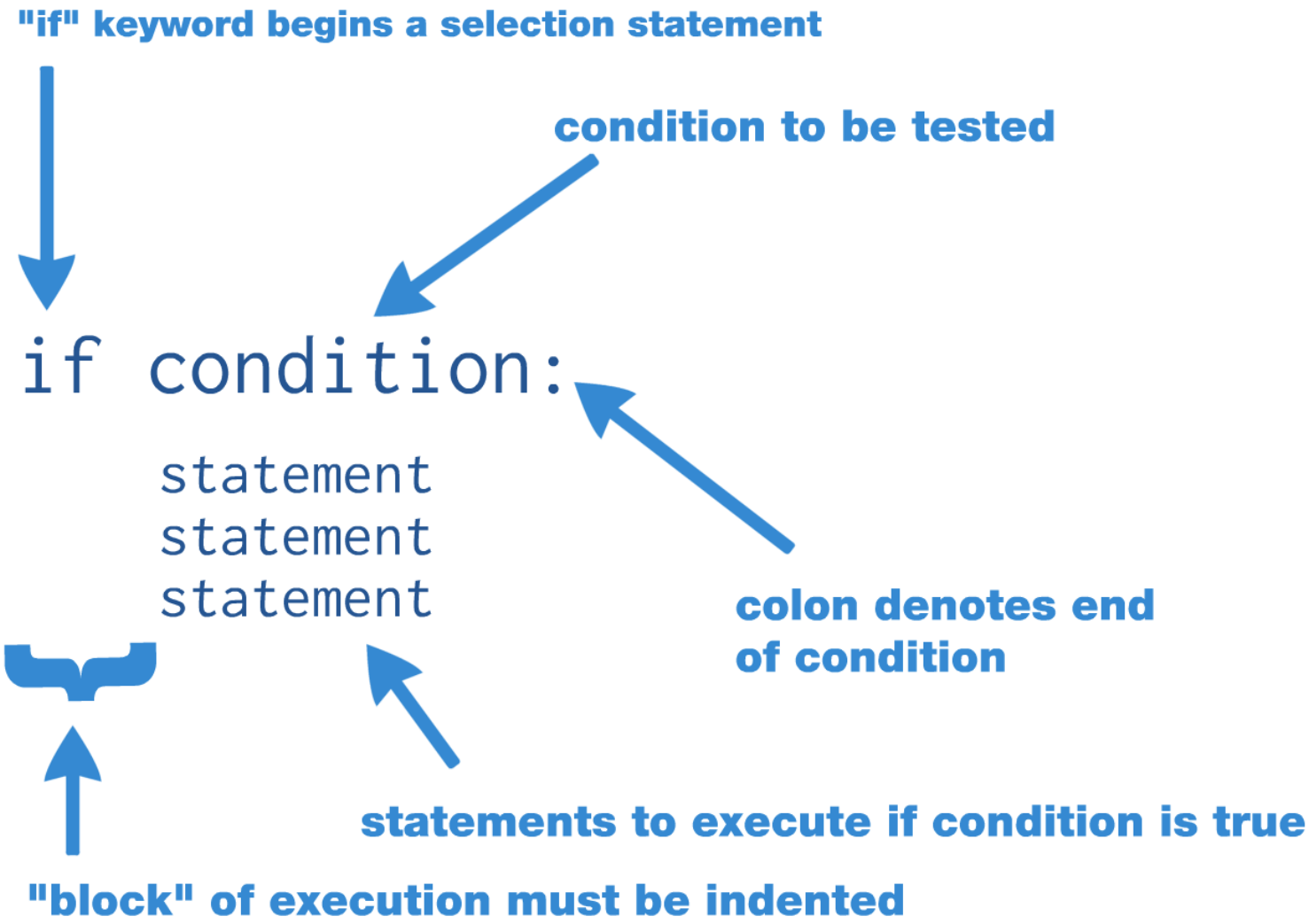
- Condition Control
- if condition:

  things to do if condition is true

- Example:

```
isim  = "Alper"
doğumyılı = 1985
yaş = 2019 - doğumyılı
if yaş>=40:
    print ("How OLD you are...")
```

Python – Control Structures



Python – Control Structures

if condition:

things to do if condition is true

```
isim  = "Alper"
doğumyılı = 1985
yaş = 2019 - doğumyılı
if yaş>=40:
    print ("Hi Grandfather", isim)
    print ("How OLD you are...")
    print ("Have you seen Atatürk?")
    yeniyaş = yaş + 30
    print ("You'll be",yeniyaş,"in 30 years")
print ("Program ended...")
```

Python – Control Structures

- Condition Control
- if condition:

    things to do if condition is true

  else:

    things to do if condition is false

Python – Control Structures

- if condition:

    things to do if condition is true

  else:

    things to do if condition is false

```
isim  = "Alper"
doğumyılı = 1985
yaş = 2019 - doğumyılı
if yaş>=40:
    print ("How OLD you are...")
else:
    print ("You are young yet...")
```

Python – Control Structures


```
isim  = "Alper"
doğumyılı = 1985
yaş = 2019 - doğumyılı
if yaş>=40:
    print ("Hi Grandfather", isim)
    print ("How OLD you are...")
    print ("Have you seen Atatürk?")
    yeniyaş = yaş + 30
    print ("You'll be",yeniyaş,"in 30 years")
else:
    print ("You are young yet...")
    print ("Do you go to school?")
    print ("We call you 'bebe' in Turkey")
print ("Program Ended...")
```

Python – Control Structures


```
isim  = "Alper"
doğumyılı = 1975
yaş = 2019 - doğumyılı
if yaş>=40:
    print ("Hi Grandfather", isim)
    print ("How OLD you are...")
else:
    if yaş>=20:
        print ("You are young yet...")
    else:
        print ("Do you go to school?")
        print ("We call you 'bebe' in Turkey")
print ("Program Ended...")
```

Python – Control Structures

- Nested "if"

```
if (g > 90):
    print ('A')
else:
    if (g > 80):
        print ('B')
    else:
        if (g > 70):
            print ('C')
        else:
            if (g > 60):
                print ('D')
            else:
                print ('F')
```

Python – Control Structures

- if – elif – else

```
if (g > 90):
    print ('A')
else:
    if (g > 80):
        print ('B')
    else:
        if (g > 70):
            print ('C')
        else:
            if (g > 60):
                print ('D')
            else:
                print ('F')
```

```
if g > 90:
    print ('A')
elif g > 80:
    print ('B')
elif g > 70:
    print ('C')
elif g > 60:
    print ('D')
else:
    print ('F')
```

Python – Control Structures

- User input in Python
- "input"

```
isim = input("Enter your name: ")
print ("Hello",isim)
```

```
Enter your name: Alper
Hello Alper
```

Python – Control Structures

- User input in Python
- "input"

```
yaş = input("How old are you? ")
print(yaş)
```

Python – Control Structures

- User input in Python
- "input"

Name	Type	Size	
yaş	str	1	12

```
yaş = input("How old are you? ")
print(yaş + 10)
```

```
How old are you? 12
Traceback (most recent call last):

  File "<ipython-input-22-1daa3b0719f1>", line 2, in
<module>
    print(yaş+10)

TypeError: must be str, not int
```

Python – Control Structures

- Convert data type (str to int)
- int( ) function

```
yaş = input("How
print(yaş + 10)
```

Name	Type	Size	
yaş	int	1	12

```
yaş = int(input("How old are you? "))
print(yaş + 10)
```

Python – Guess the number

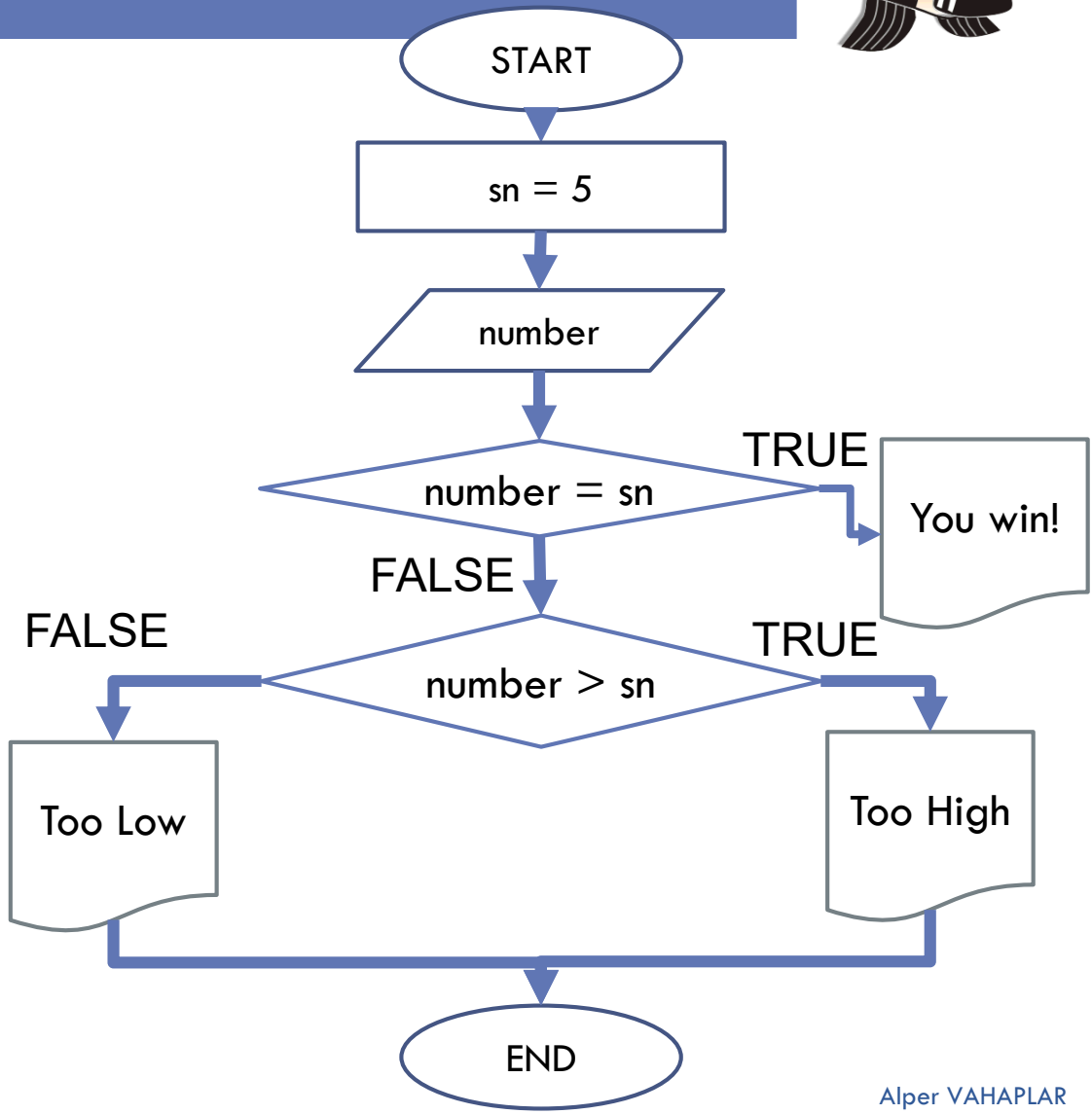
- Ask the user to guess a number between 1 and 10. Assume they will enter an Integer.
- Pick a number between 1 and 10 that is your "secret" number (for example, 5)
- If the user types in your secret number, tell them that they win!
- If the user types in a number less than or greater than your secret number, tell them that they're either above or below the number and to try again.

Python – Guess the number

1. START
2. secretnumber = 5
3. READ number
4. IF (number = secretnumber) PRINT "You Win..."
   ELSE
      IF (number > secretnumber) PRINT "Too High"
      ELSE PRINT "Too Low"
5. END

Python – Guess the number

1. START
2. secretnumber = 5
3. READ number
4. IF (number = secretnumber)
   PRINT "You Win…"
   ELSE IF (number > secretnumber)
   PRINT "Too High"
   ELSE PRINT "Too Low"
5. END



Python – Guess the number

1. START
2. secretnumber = 5
3. READ number
4. IF (number = secretnumber)
   PRINT "You Win..."
   ELSE IF (number > secretnumber)
   PRINT "Too High"
   ELSE PRINT "Too Low"
5. END

```
secretnumber = 5
number = int(input("Guess a number:"))
if number == secretnumber:
        print ("You Win!!!")
else:
    if number > secretnumber:
        print ("Too High")
    else:
        print ("Too Low")
```

Python – Guess the number


```
secretnumber = 5
number = int(input("Guess a number:"))
if number == secretnumber:
        print ("You Win!!!")
elif number > secretnumber:
        print ("Too High")
else:
        print ("Too Low")
```

Spyder – Python Editor

- Calculate "geçme_notu" for given "vize, ödev, final" grades.
- Define the corresponding letter for "geçme_notu"
- geçme_notu = vize x 40% + Final x 50% + ödev x 10%
  - geçme_notu < 60 => " F "
  - 60 < geçme_notu < 70 => " D "
  - 70 < geçme_notu < 80 => " C "
  - 80 < geçme_notu < 90 => " B "
  - geçme_notu > 90 => " A "