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.**

Alper VAHAPLAR

Python Programming Language

☐ Guido Van Rossum(Amsterdam, December 1989)

☐ Monty Python – English Comedian Group

☐ Goals:

☐ An easy and intuitive language just as powerful as major competitors

☐ Open source, so anyone can contribute to its development

☐ Code that is as understandable as plain English

☐ Suitability for everyday tasks, allowing for short development times

Spyder – Python Editor

☐ Scientific Python Development EnviRonment

- Written in Python, for Python

- Designed by and for scientists, engineers and data analysts.

- IDE – Integrated Development Environment

Spyder – Python Editor

☐ Spyder Console (Ipython)
☐ Command Line

```
Console 1/A  ✕

Python 3.6.4 |Anaconda, Inc.| (default, Jan 16 2018, 10:22:32) [MSC v.1900 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.

IPython 6.2.1 -- An enhanced Interactive Python.

In [1]:
```

Operators in Python

☐Arithmetic Operators

Operator	Operation	Example
+	Addition	48 + 23
–	Subtraction	48 – 23
*	Multiplication	48 * 23
/	Division	48 / 23
%	Modulus	48 % 23
**	Exponent	48 ** 23
//	Floor Division	48 // 23

VAHAPLAR

Operators in Python

☐ Comparison Operators

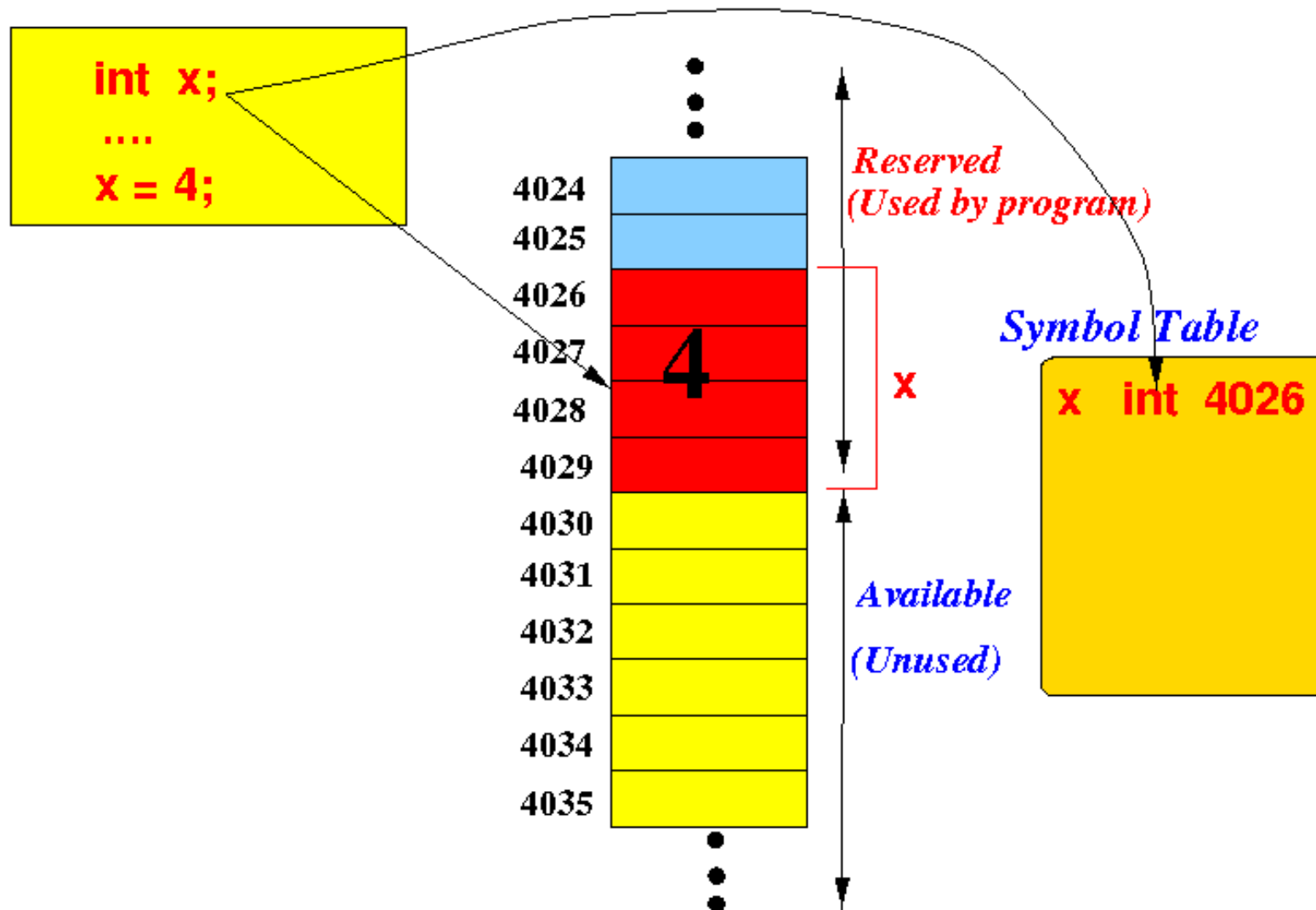| Operator	Operation	Example
==	Equal	48 == 23
!= **<>**	Not Equal	48 != 23 48 <> 23
>	Greater than	48 > 23
<	Smaller than	48 < 23
>=	Greater than or equal to	48 >= 23
<=	Less than or equal to	48 <= 23

Variables in Python

☐ A **variable** is a named memory location in which data of a certain type can be stored.

☐ A variable has :

☐ Name

☐ Address

☐ Type

☐ Value

☐ Scope

Variables in Python


```
int  x;
....
x = 4;
```

4024
4025
4026
4027
4028
4029
4030
4031
4032
4033
4034
4035

4

x

Reserved
(Used by program)

Available
(Unused)

Symbol Table

x   int 4026

Alper VAHAPLAR
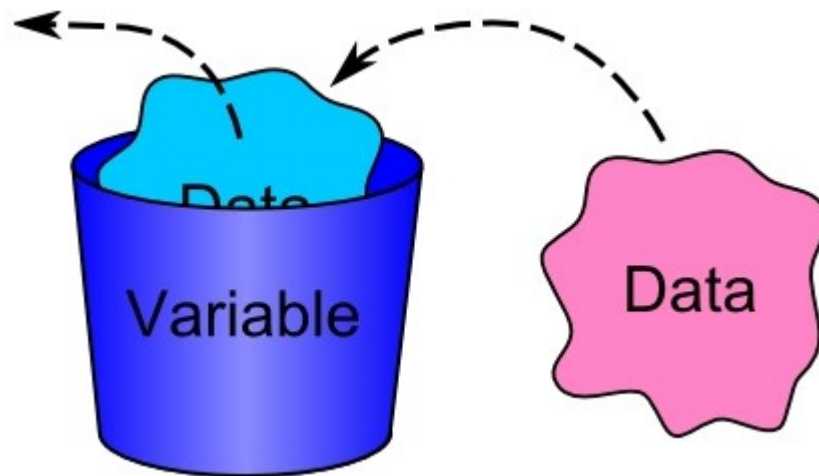
☐Varible Name:

☐Must begin with a letter (a - z, A - B) or underscore _

☐Other characters can be letters, numbers or _

☐Are case sensitive: capitalization counts!

☐Can be any reasonable length.

☐Ex: toplam, sayac, adet, gecme_notu, _temp

yeni_gelen_musteri_sayisi

Variables in Python

□ Assignment Operator:

Name	Type	Size	
ad_soyad	str	1	Alper Vahaplar
adet	int	1	87
alan	float	1	157.0
toplam	int	1	0

| Variable explorer | File explorer | Help |

$$=$$

□ we used (←) in pseudo-code for assignment.

□ Ex:

□ toplam = 0

□ adet = 12 + 75

□ ad_soyad = "Alper VAHAPLAR"

□ alan = 2 * 3.14 * (5**2)

Variables in Python

☐Assignment Operator: (=)

- ☐ x = 3
- ☐ y = 2
- ☐ z = x + y
- ☐ x = x + 1

☐Assignments can be done *en masse:*

- ☐ *x = y = z = 5*

☐Multiple assignments can be done on one line:

- ☐*x, y, z = 44, 3.14, 'Hüseyin'*

Data Types in Python

☐ *Basic Types:*

▪ *Boolean (True or False)*

▪ *Integer Numbers (47),*

▪ *Floating Point Numbers (3.14),*

▪ *Complex Numbers (3 + 2j),*

▪ *Strings ("Alper", 'Computer Programming')*

☐ *Boolean (True or False),*
   ☐ `In [1]: a = 45 < 23`
☐ *Integer Numbers (47),*
   ☐ `In [2]: b = 45`
☐ *Floating Point Numbers (3.14),*
   ☐ `In [3]: c = 6.02`
☐ *Complex Numbers (3 + 2j),*
   ☐ `In [4]: d = 3 + 2j`
☐ *Strings ("Alper", 'Computer Programming')*
   ☐ `In [5]: e = "Bi ara mı versek? :)"`

Data Types in Python

Name	Type	Size	
a	bool	1	False
b	int	1	45
c	float	1	6.02
d	complex	1	(3+2j)
e	str	1	Bi ara mı versek? :)

Data Types in Python

Name	Type	Size	
a	bool	1	False
b	int	1	45
c	float	1	6.02
d	complex	1	(3+2j)
e	str	1	Bi ara mı versek? :)

```
In [48]: type(a)
Out[48]: bool

In [49]: type(b)
Out[49]: int

In [50]: type(c)
Out[50]: float
```

Data Types in Python

☐ *Other Types:*
- ☐ *Lists*
- ☐ *Dictionaries*
- ☐ *Tuples*
- ☐ *Sets*

Operators in Python

☐ Compound Operators

Operator	Example	Equivalent to
+=	x += 3	x = x + 3
–=	x –= 3	x = x – 3
*=	x *= 3	x = x * 3
/=	x /= 3	x = x / 3
%=	x %= 3	x = x % 3