Pythonda o'zgaruvchilar va ma'lumot turlari

Roadmap

- Comments
- Variables
- Data Types
- Numbers
- Python Syntax
- Type Conversion
- Errors

Comments

- Inson tilida dastur qanday vazifa bajarayotganligini tushuntirish uchun eslatma sifatida yozilgan matn **comment** (izoh, sharh) deb aytiladi.

- Kommentlar dastur tomonidan bajarilmaydi, lekin ular dastur o'qilishini yaxshilaydi va tushunishni osonlashtiradi.
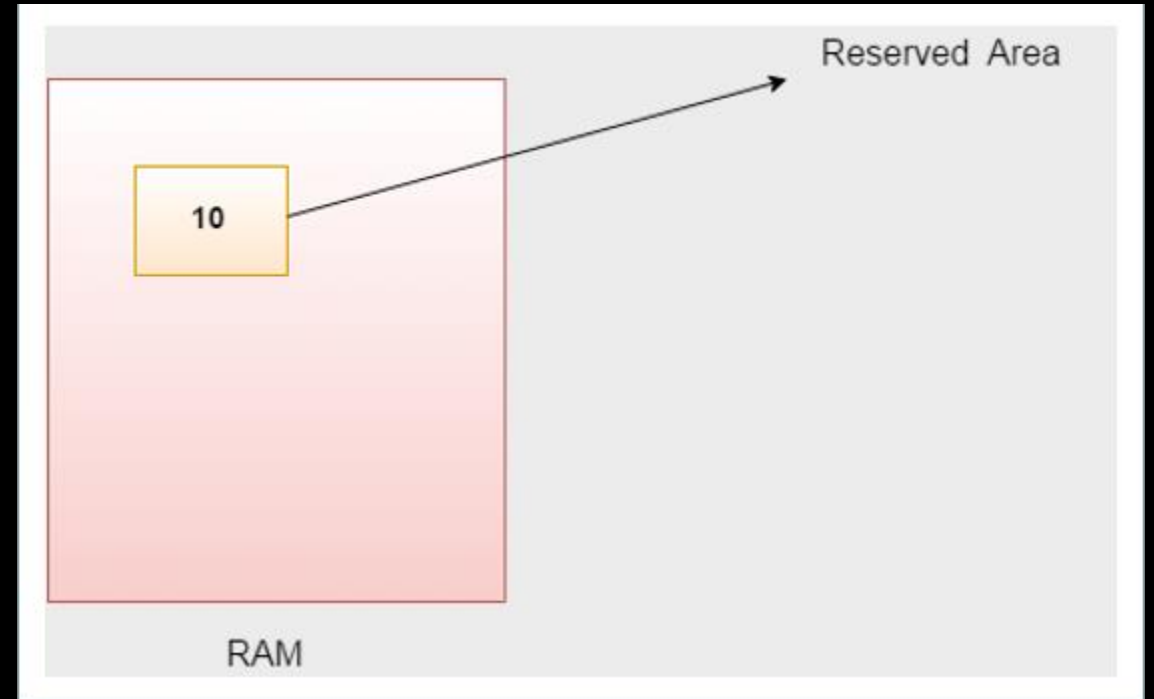
```
# Bu bir qatorli komment

"""
Bu bir necha qatorli komment
Unda istalgancha komment yozish mumkin
"""
```
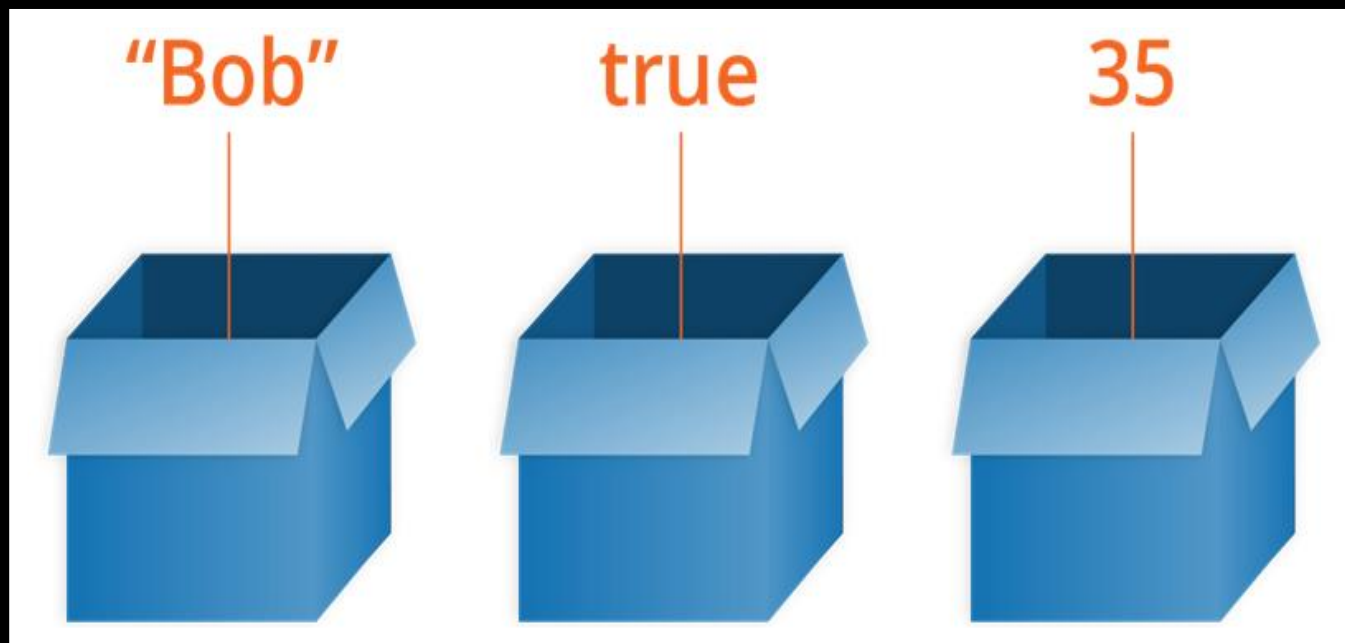
Variables (O'zgaruvchilar)

O'zgaruvchi - ma'lumotlarni yozish va o'qish mumkin bo'lgan xotiraning nomlangan qismi.

Variables (O'zgaruvchilar)

- **O'zgaruvchilar** - ma'lumot saqlash uchun nomlangan kotainerlardir

- Python'da o'zgaruvchilar dinamik tipdagi (**dynamic typing**) hisoblanadi, ya'ni o'zgaruvchilar turini avtomatik ravishda tanlaydi

Data Types – Ma'lumot turlari

- **Ma'lumotlar turlari (Data Types)** o'zgaruvchining turini aniqlash uchun ishlatiladi. Bu o'zgaruvchida qanday turdagi ma'lumotlarni saqlashimizni belgilaydi.

- Xotirada saqlanadigan ma'lumotlar turli xil bo'lishi mumkin. Masalan, odamning yoshi raqamli qiymat sifatida, uning manzili esa harf-raqamli belgilar sifatida saqlanadi.

Python'da ma'lumot turlari (Data Types)

- Integer
- Float
- String
- Boolean
- List
- Tuple
- Set

Float

- **Float (float) -** o'nli kasrlar.
- Misol uchun: 0.5, -1.2, 9.0, …

- Float ma'lumot turiga kiruvchi sonlarni aniqlik darajasi chegaralangan, ya'ni verguldan keying xonalar

- Ular ustida barcha matematik amallarni bajarsa bo'ladi

```python
# Floats

PI = 3.14 # matematikadagi pi soni

half = 0.5
healthy_temperature = 36.6

print(type(PI))
```

Integer

- **Integer (int)** – butun son degani.
- Misol uchun: -3, -2, -1, 0, 1, 2, …

- Pythonda Integerning chegarasi yo'q, ma'lumot hajmi dinamikli o'zgaradi

- Ular ustida barcha matematik amallarni bajarsa bo'ladi

```python
# Integers

answer = 42 # hayot, koinot va hamma narsaga javob

distance = 363_104_000 # yer va oy o'rtasidagi masofa (m)

speed = 1563 # Appolo's speed (m/s)

duration = distance / speed # in seconds

print(type(answer))
print(type(duration))
```

Decimal

0.3

Most accurate representation = 3.00000011920928955078125E-1

New conversion

Binary

0x3E99999A = 00111110 10011001 10011001 10011010

Sign	Exponent	Mantissa
0	01111101	00110011001100110011010

```
sys.path.extend(['D:\\Projects\\Online Platform\\eduon_1'])

Python 3.11.5 (tags/v3.11.5:cce6ba9, Aug 24 2023, 14:38:34) [MSC v.1936 64 bit (AMD64)]In [2]: example_float = 0.3
In [3]: for i in range(20):
   ...:         print(example_float)
   ...:         example_float += 0.3
   ...:
0.3
0.6
0.8999999999999999
1.2
1.5
1.8
2.1
2.4
2.6999999999999997
2.9999999999999996
3.2999999999999994
3.59999999999999
3.89999999999999
4.19999999999999
4.49999999999999
4.79999999999999
5.09999999999999
5.39999999999999
5.69999999999998
5.99999999999998
```

HUMAN
CASUALTIES: 0.0

String

- **String (str) – matn saqlash uchun ma'lumot turi. Uning hajmi dinamikli o'zgaradi.**

- String uzunligini toppish uchun **len()** funksiyasidan foydalanamiz

```python
# String

name = "Mukhammadjon"
blog = "https://t.me/mukhammadjons_blog"


print(type(name))
```

Boolean

- **Boolean (bool) –** faqat True/False (rost/yolg'on) qiymatlarni saqlaydigan ma'lumot turi

```python
# Boolean

light_switch = True # chiroq yongan
light_switch = not light_switch # chiroq o'chdi

print(type(light_switch))
```

O'zgaruvchilarni nomlashdagi kelishuvlar (Conventions)

```python
# Cases

1. flatcase
2. camelCase
3. PascalCase
4. snake_case
5. kebab-case
6. UPPER_CASE

# Python o'zgaruvchulari nomlash uchun snake_case dan foydalaniladi
my_name = "Mukhammadjon"
age = 21

# Python'da kelishuv sifatida constant lar uchun UPPER_CASE ishlatiladi
PI = 3.14
```

Errors: Syntax Error

```python
# Syntax Error example

print("Salom"   # qavsni yopishni unutish

name = "Mukhammadjon   # qo'shtirnoqni yopishni unutish

class = 11   # Reserved keywordbilan nomlash
```

Errors: Runtime Error

```python
# Runtime Error example

print(name)  # O'zgaruvchini e'lon qilmasdan ishlatish


name = "Mukhammadjon"
print(Name)  # O'zgaruvchinilar case-sensitive


infinity = 47 / 0  # no'lga bo'lish


print("My group number: " + 42) # string va integerni qo'shish
```

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Python Tutorial

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Example

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```
print("Hello, World!")
```

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Python 3.12.0 documentation

Welcome! This is the official documentation for Python 3.12.0.

Parts of the documentation:

What's new in Python 3.12?
or all "What's new" documents since 2.0

Tutorial
start here

Library Reference
keep this under your pillow

Language Reference
describes syntax and language elements

Python Setup and Usage
how to use Python on different platforms

Python HOWTOs
in-depth documents on specific topics

Installing Python Modules
installing from the Python Package Index & other sources

Distributing Python Modules
publishing modules for installation by others

Extending and Embedding
tutorial for C/C++ programmers

Python/C API
reference for C/C++ programmers

FAQs
frequently asked questions (with answers!)

Indices and tables:

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quick access to all modules

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all functions, classes, terms

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the most important terms explained

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History and License of Python

Homework

- a va b nomli o'zgaruvchisini e'lon qiling (istalgan integer qiymati bilan). Ularning yig'indisini ekranga chiqaring.

- a, b va c nomli o'zgaruvchisini e'lon qiling (istalgan integer qiymati bilan). Ularning o'rta arifmetigini ekranga chiqaring va o'rta arifmetik qanday hisonlanganligi haqida comment yozing.

- birth_year nomli o'zgaruvchi e'lon qiling va uning qiymatiga tug'ilga yilingizni kiriting, current_year nomli o'zgaruvchi e'lon qiling va uning qiymatiga hozirgi yilni kiriting. Yoshingizni nechada ekanligini hisoblab, natijani ekranga chiqaring.

- a va b o'zgaruvchisini e'lon qiling. A ning qiymatini b ga, b ni qiymatini a ga o'zgartiradigan kod yozing. (qo'shimcha o'zgaruvchi ishlatmang)