

# APPLICATION LABORATORY II



## Python Data Types

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## OUTLINE

- Introduction to Data Types
- Characteristics of the Data Types
- Type Conversion



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## DATA TYPE

- Data type specifies the type of the variable
- Data type is set when the value is assigned to a variable
- Python primitive types: Numeric, text, boolean
- The type of the literal can be obtained by the `type()`

```
x = 10
```

```
type(x)
```



## NUMERIC DATA TYPES

- Numbers can be of the data types as,
  - int – positive and negative whole numbers with unlimited length
  - float – positive and negative numbers with decimals, scientific numbers with the exponential (e or E)
  - complex – numbers with the imaginary part (j)
- numeric data types can be converted to each other
  - `int()`, `float()`, `complex()`
  - int, float can be converted to complex type

### int

```
23  
1439999599903  
-12
```

### float

```
1.0  
23.984  
-156.9  
12e3  
-12.5E2
```

### complex

```
2+1j  
5j  
0+3j  
-7j
```



## TEXT DATA TYPE

- Text data values can be of the data type 'str'
- String literals are indicated by single quotation ( ' ') or double quotation ( " ")
- Use suitable quotation mark to distinguish between apostrophe
  - Using escape character (\') is possible
- Multi-line strings are denoted by triple single or double quotation ( ' ' ' ' ' ' )
  - Python preserves the line breaks as indicated in the string

---

# single line string

a = "A sunny day"

---

---

# multi line string

a = " " It's a Sunday and  
it's a sunny  
day " " "

---



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## BOOLEAN DATA TYPE

- Boolean data type has two values: **True** or **False**
- Python Boolean data type is called 'bool'
- Comparison expressions, conditional statements return a boolean value
- bool() evaluates any value and returns a boolean type
  - Numbers return **False** if the value is 0
  - Other data types return **False** if the value is not specified: empty
  - Value **None** returns a **False**

bool(0)  
bool("")  
bool([ ])  
bool(None)



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## CONVERSION BETWEEN DATA TYPES

- integers and floats can be converted to string
  - Use the `str()` functions
- floating point numbers can be converted to int and vice versa
- strings can be converted to int and float, given that the string is a representation of a number

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