

Python:

Data Types: Python supports diverse data types for representing different kinds of information

Numbers:

- **int:** Integers (whole numbers without decimals)
- **float:** Floating-point numbers (decimals)
- **complex:** Complex numbers (real and imaginary parts)

Text:

- **str:** Strings (sequences of characters)

Logical Values:

- **bool:** Boolean values (True or False)

Variables: Variables store values and have descriptive names (case-sensitive)

Type Casting: Convert values between data types explicitly (syntax varies)

Input: Use the `input()` function to get user input as a string

Output: Use the `print()` function to display text or variables

Conditions: Use `if`, `elif`, and `else` statements to execute code based on truth values

Loops:

- **for** loops iterate over sequences
- **while** loops execute until a condition becomes false

- Use functions like `sqrt()`, `pow()`, `sin()`, `cos()`, `tan()`, `ceil()`, `floor()`, `log()`, `exp()`, `pi` (value of π), and much more:

Python

```
result = math.sqrt(16) # Square root
angle_in_radians = math.radians(45) # Convert degrees to radians
hypotenuse = math.hypot(3, 4) # Pythagorean theorem
```

Strings

- Strings are sequences of characters:

Python

```
message = "This is a string."
```

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- Access characters using indexing (starts from 0):

Python

```
first_char = message[0] # 'T'  
last_char = message[-1] # '.'
```

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- Slicing extracts substrings:

Python

```
substring = message[4:8] # 'is a'
```

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- Use string methods for various operations:

Python

```
uppercase = message.upper() # 'THIS IS A STRING.'  
lowercase = message.lower() # 'this is a string.'  
split_words = message.split() # ['This', 'is', 'a', 'string.']
```

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