04. STRINGS AND NUMBERS

M2U5P4

WHAT ARE STRINGS?

PYTHON STRINGS

- Strings is a textual type of data
- It can contain 1 character, 1 word or more words
- String in Python are surrounded by either single quotation marks, or double quotation marks.

```
print("Hello")
print('Hello')
```

ASSIGN STRING TO A VARIABLE

- Assigning a string to a variable is done with the variable name followed by an equal sign and the string:

```
a = "Hello"
print(a)
```

MULTILINE STRINGS

- We can assign a multiline string to a variable by using three quotes or three single quotes:

```
a = """Lorem ipsum dolor sit amet,
consectetur adipiscing elit,
sed do eiusmod tempor incididunt
ut labore et dolore magna aliqua."""
print(a)
```

```
a = '''Lorem ipsum dolor sit amet,
consectetur adipiscing elit,
sed do eiusmod tempor incididunt
ut labore et dolore magna aliqua.'''
print(a)
```

STRING LENGTH

- We can measure the length of a string by using the `len()` function

```
a = "Hello, World!"
print(len(a))
```

COMBINING STRINGS

- We can combine two or more strings into one string by using + operator

```
a = "Hello"
b = "World"
c = a + b
print(c)
```

COMBINING STRINGS

- We can combine two or more strings into one string by using + operator

```
a = "Hello"
b = "World"
c = a + " " + b
print(c)
```

ANY QUESTIONS ABOUT STRINGS?

WHAT ARE NUMBERS?

NUMBERS

- A number is mathematical object used to count, measure and label things
- Calculations with numbers are done with arithmetical operations
- Most familiar operations are addition, subtraction, multiplication and division
- What is the most highest number?
- What is the most lowest number?

PYTHON NUMBERS

- There are three numeric types in Python
  - `int`
  - `float`
  - `complex`

```
x = 1     # int
y = 2.8   # float
z = 1j    # complex
```

INT

- Int, or integer, is a whole number, positive or negative, without decimals, of unlimited length

```
x = 1
y = 35656222554887711
z = -3255522

print(type(x))
print(type(y))
print(type(z))
```

FLOAT

- Float, or "floating point number" is a number, positive or negative, containing one or more decimals

```
x = 1.10
y = 1.0
z = -35.59

print(type(x))
print(type(y))
print(type(z))
```

TYPE CONVERSION

- We can convert from one type to another with the `int()` and `float()` methods:

```
1.0
2
<class 'float'>
<class 'int'>
```

```
x = 1    # int
y = 2.8  # float

#convert from int to float:
a = float(x)

#convert from float to int:
b = int(y)

print(a)
print(b)

print(type(a))
print(type(b))
```

RANDOM NUMBER

- Some programming languages have a built in `random()` function to make a random number
- Python doesn't have it….
- Python has a built-in module called `random` that can be used to make random numbers:

```
import random

print(random.randrange(1, 34))
```

ANY QUESTIONS ABOUT NUMBERS?

CLASSROOM WORK TIME

TASK 1: AREA OF SQUARE

- Make a program that will calculate the area of a square
- Ask for input from the user
- Calculate it and give the result

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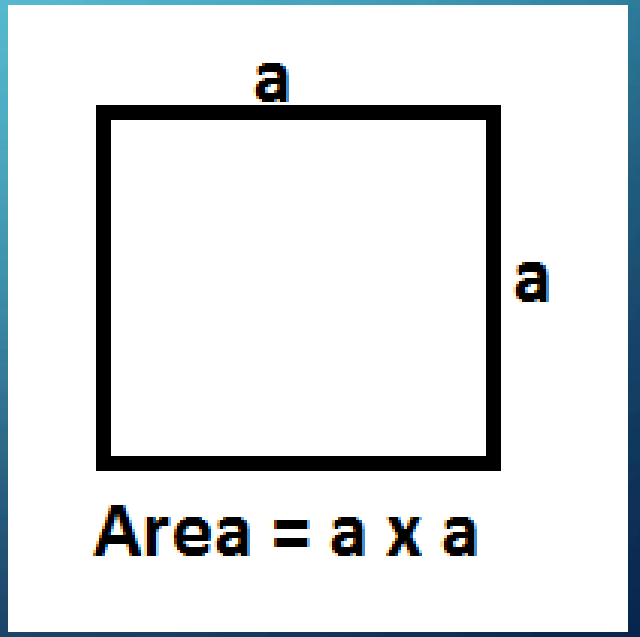


TASK 1: AREA OF SQUARE

```
1 print("This program will calculate the area of a square")
2 a = int(input("Enter the length of the side: "))
3 area = a * a
4 print("Area of the square is " + area)
```

TASK 1: AREA OF SQUARE

DOES IT WORK?

```
1 print("This program will calculate the area of a square")
2 a = int(input("Enter the length of the side: "))
3 area = a * a
4 print("Area of the square is " + area)
```

TASK 1: AREA OF SQUARE

NO IT DOESN'T

```
1 print("This program will calculate the area of a square")
2 a = int(input("Enter the length of the side: "))
3 area = a * a
4 print("Area of the square is " + area)
```

```
Traceback (most recent call last):
  File "<pyshell>", line 4, in <module>
TypeError: can only concatenate str (not "int") to str
```

TASK 1: AREA OF SQUARE

```
1 print("This program will calculate the area of a square")
2 a = int(input("Enter the length of the side: "))
3 area = a * a
4 print("Area of the square is ", area)
```

STRING + NUMBER

- As we learned before that we cannot combine strings and numbers like this:

```
age = 36
txt = "My name is John, I am " + age
print(txt)
```

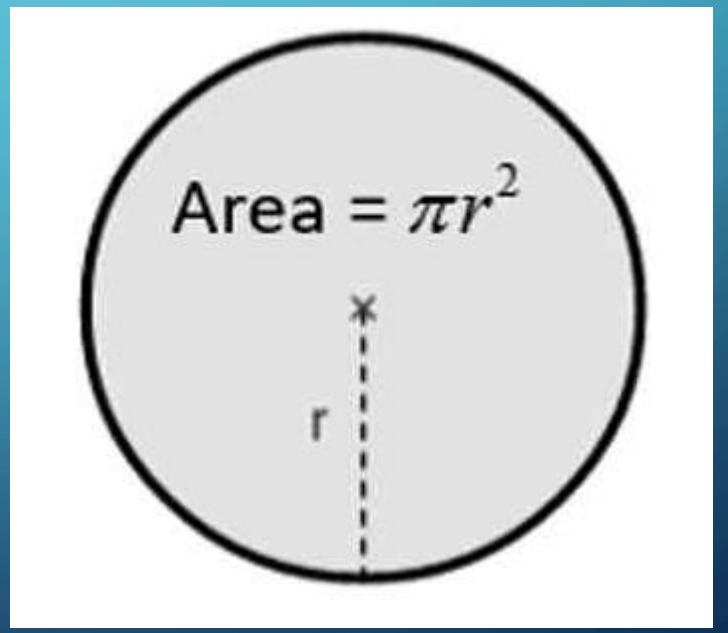
STRING + NUMBER

- If we want to combine them together, we should use a **comma (,)** sign:

```
1 age = 36
2 print("My name is John, and I am", age , "years old")
```

TASK 2: AREA OF CIRCLE

- Make a program that will calculate the area of a circle
- Ask for input from user
- Calculate it and give result

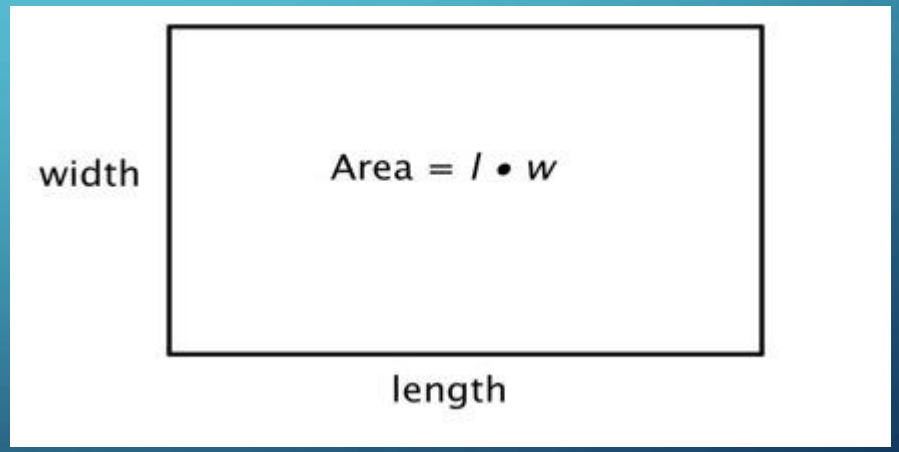


TASK 2: AREA OF CIRCLE

```
1 print("This program will calculate the area of a circle")
2 r = int(input("Enter the radius of the circle: "))
3 area = 3.14 * r * r
4 print("Area of the circle is ", area)
```

TASK 3: RECTANGLE AREA

- Make a program that will calculate the area of a rectangle
- Ask for input from user
- Calculate it and give result



TASK 3: RECTANGLE AREA

```
1 print("This program will calculate the area of a rectangle")
2 l = int(input("Enter the length of the rectangle: "))
3 w = int(input("Enter the width of the rectangle: "))
4 area = w * l
5 print("Area of the rectangle is ", area)
```

ANY QUESTIONS?

WORKSHEET

THE END