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Software Design & Development
CFS2160

Week 4 – Strings & Tuples

Session Plan

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1. Strings
2. Tuples
3. Indexes
4. Finally

Strings

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As we have discussed before, a String is a Data Type used to contain any sequence of zero or more characters.

The characters can be any letter, number or symbol of any alphabet.

Strings can be identified by the use of speech marks.

Example:

"Hello. World" – Correct string syntax

Hello. World – Incorrect string syntax

String Sequence

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A String is a sequence of characters, we can look at our "Hello. World" example as a sequence as we do in our Maths module:

<H,e,l,l,o,., ,W,o,r,l,d>

As such, we can do lots of interesting things with Strings.

Note that the space is also classed as a character.

Doing things with Strings

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1. Slice: chop them up into sub strings or simple elements in any way we want
2. Len: count the number of elements
3. Concatenate two or more Strings
4. Format: dynamically insert values into strings
5. Convert case, upper & lower, useful to ensure that out input is in the correct format

There are many String methods available, my favourite reference is this website

Tuples

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A tuple is a *type of collection* that contains things (objects), the objects in a Tuple can be of any Data Type.

Tuples are good for storing a collection of data that is immutable (does not need to change).

Once created, the contents of the Tuple are fixed.

Like strings, Tuples have many methods which interact with their contents.

Tuple Methods

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1. len(tup_1), returns the number of elements (objects) in the Tuple.
2. del tup_1, deletes the Tuple.
3. cmp(tup_1, tup_2) compares two tuples to see if they are the same, returns True or False.
4. max(tup_1), returns the largest object (numerically or alphabetically)
5. min(tup_1) the opposite of max

Max & Min returns an element with the same Data Type as it was entered.

Indexes

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We can now see that non empty Strings and Tuples contain one or more elements.

Each element has a unique index (position in the String or Tuple)

All indexes start at zero and increase by one with each element contained within.

The 1st element has an index of zero, 2nd element is 1, 3rd is 2 etc....

Character	H	e	l	l	o	.		W	o	r	l	d
Index	0	1	2	3	4	5	6	7	8	9	10	11

We use the index to identify an element in a given position.

Some Questions

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```
tuple_1 = (15, 71, 23)
```

What is printed the value of: `print(len(tuple_1))`

1. 15
2. 3
3. null
4. 109

Some Questions

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```
tuple_1 = (15, 71, 23)
```

What is printed the value of: `print(len(tuple_1))`

1. 15
2. 3
3. null
4. 109

3, len() counts the number of objects in the Tuple

Some Questions

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```
tuple_1 = (15, 71, 23)
```

What is printed the value of: `print(type(max(tuple_1)))`

1. 71
2. 3
3. <class 'int'>
4. int

Some Questions

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```
tuple_1 = (15, 71, 23)
```

What is printed the value of:

```
print(type(max(tuple_1)))
```

1. 71
2. 3
3. <class 'int'>
4. int

71 is the max value, its Data Type is <class ‘int’>

Some Questions

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```
tuple_2 = (Gary', 'Tony', 'Rubiya', 'Steve')
```

What is printed the value of: `print((min(tuple_2))`

1 Steve

2 Tony

3 Rubiya

4 Gary

Some Questions

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```
tuple_2 = (Gary', 'Tony', 'Rubiya', 'Steve')
```

What is printed the value of: `print((min(tuple_2))`

1 Steve

2 Tony

3 Rubiya

4 Gary

Gary is the alphabetically lowest object in the Tuple

Some Questions

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```
greeting = "Hello. World"
```

What is printed the value of: `print(greeting[1])`

1. e
2. H
3. W
4. null

Some Questions

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```
greeting = "Hello. World"
```

What is printed the value of: `print(greeting[1])`

1 e

2 H

3 W

4 .

3, [1] is asking for the element in index 1 (which is the second element in our String)

Finally

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- ✓Any questions on todays topic?
- ✓Have a look at todays associated worksheet
- ✓Continue working on any unfinished tutorial work.
- ✓One to one questions and feedback.