CSI31 INTRODUCTION TO COMPUTER PROGRAMMING I

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Topics

- Strings and string methods
- Lists and list methods
- Sequences, indexing, and slicing
- Character encoding

String data type

- Text is represented by the string data type.
- A string is a sequence of characters enclosed in quote marks – “This is a string.” or in apostrophes – ‘This is a string.’
- Make sure the enclosing symbols match. The enclosing symbols are not par of the string.

- In IDLE, create some strings and assign them to variables.

- What string operations do you know already?

- How do you get a string as input?

Indexing – get individual characters

Positions in a string are numbered from left to right, starting with 0

In IDLE -

```
x = “This is a string.”
x[0]
x[4]
```

Indexing with [ ]: x[n] is the character in the string x at the position determined by n

Form: <string>[(expr)]

Indexing – get individual characters

Strings can also be indexed from the right end with negative indices.

What is -

x[-1]?
x[-2]?
x[-5]?

Getting a substring

Get a subsequence of consecutive characters by slicing.

x[0:3] – the characters from position 0 up to but not including position 3
x[5:10] – the characters from position 5 up to but not including position 10
x[:3] - the characters from the beginning position up to but not including position 3
x[7:] – the characters from position 7 up to the end.

Some string functions

The function len returns the length of a string – len(x)

Print out the characters in x, one per line.

Print out the characters in x on one line with spaces between.

You can loop through the indices or you can loop through the sequence directly.

Write a program that prints a string in reverse order.

How do you get the right indices? Use negative indices.

Write a program that creates usernames.

A computer username consists of the first letter of the persons first name followed by the first 7 characters of the persons last name.

Design:

Get the first name.
Get the last name.
Pull out the correct pieces and concatenate them.
Print the username.

More string functions

For a string s –
s.split() – returns a list of the pieces of s that are separated by spaces.
s.append(item) – adds item to the end of the list s
s.lower() – returns a copy of the string s but all letters are in lowercase.
s.upper() – returns a copy of the string s but all letters are un uppercase

Lots more

Lists

Python has a built-in data type – list - for a sequence of any kind of values.

y = [0, 35.23, ‘some words’, -5, ‘v’]

Indexing and slicing work with lists. +, * too

You can loop through a list.

How are characters represented?

By numbers of course
Early standard representation– ASCII
Later standard for representing characters in different alphabets, math symbols, … - UNICODE https://unicode.org/

Python functions –
ord(‘c’) - returns the number that represents the character c.
chr(42) – returns the character represented by the number 42.