Lab 7

- Lab 6 Review
- Review for Lab 7

Lab Musings

- As we learn more computer science, we're moving toward a much **higher ratio of thinking to coding**
  - Give yourself the time and room to think
- Going beyond simply correctness in solutions
  - Looking for understanding of good coding practices
    - Testing, readability, usability, documentation, organization, efficiency
      - (not necessarily in that order)

Lab Musings

- Lab benefit: access to other students, lab assistants, and instructor to help
- Lab limitation: may not be the best environment
  - Seems to cause a competitive atmosphere, increased anxiety for some students
  - You have until Friday to complete the lab
  - Work at your pace, **think clearly** and **deeply**

Checking if a str contains a substring

Instead of using a method, could use `in` operator because didn't care where in the string it was:

```
if "r" in phrase:
```

Reversing a String

- Both are correct implementations
  - Preference depends on how you think
  - (other correct implementations as well)

```
reverse = ""
for index in range(len(mystr)-1,-1,-1):
    reverse = reverse + mystr[index]
return reverse
```

```
reverse = ""
for char in mystr:
    reverse = char + reverse
return reverse
```


Programmatically Testing Functions

- Trying to get you to be more efficient testers
  - Don't worry about user input
  - Just make the test calls
    - Think about input and expected output
- Example:

```
test.testEqual( reverseString("cat"), "tac")
```

- Can still print in function during debugging
  - Then remove print statements

Over `str`ing

- Why do you ***not*** need to use `str` in the following code segments?

```
origString = str( input("What is your string? ") )
```

```
print(str(fahr), "degrees F is", str(cels), "degrees C")
```

Goal: Simplify/reduce code
→ Less code → easier to understand, less error-prone

Over `sys.exit()`

- You don't need to use sys.exit() every time you want to exit.
  - Typically use for an ***early*** exit
- You can let the program exit "naturally"

```
if "." not in mystr:
    # error message…
    sys.exit()
else:
    # code to handle file extension …
    sys.exit()
```

Review

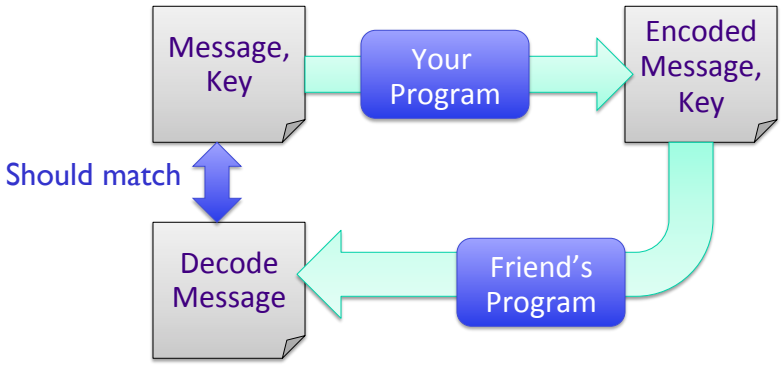
- How can we find the ASCII value for a character?
- How can we find the character associated with an ASCII value?

Review

- What is the syntax for representing a list?
- How are lists and strings similar?
  - How are they dissimilar?
- What are some common list methods and operations?

Caesar Cipher

- Write an encoding/decoding program
  - Encode a message
  - Give to a friend to decode



What is the algorithm for encoding a letter?

- Assuming a lowercase letter

What is the algorithm for encoding a letter?

(Assuming a lowercase letter)

1. Convert the character to its ASCII value
2. Add the key to that value
3. Make sure that the new value is a "valid" ASCII value, i.e., that that new value is in the range of lowercase letter ASCII values
    1. If not, "wrap around" to adjust that value so that it's in the valid range
4. Convert the ASCII value into a character

What is the algorithm for encoding a message?

- Assuming message only made of up lowercase letters and spaces

Caesar Cipher (Partial) Algorithm

- Create a new encoded message
- For each character in the message
  - Check if the character is a space; if it is, it stays a space
    - Add space to the encoded message
  - Otherwise
    - Encode letter
    - Add encoded letter to the encoded message

Textbook Grading

- No need to panic
- Just trying to reconcile the grades
  - 4% of your grade
  - The "small" things don't worry me over ~11 assignments
- I want to know if there are grades that you think aren't correct.
- List for those

Lab 7

- Strings
  - Escape sequences
  - Formatting
- Lists
- Caesar Cipher