CS21: INTRODUCTION TO COMPUTER SCIENCE

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Swarthmore College
Outline Dec 1:

- Quiz 5: first 30 min
- `ord/chr` (cipher.py)
- Overloading other operators in classes

Notes
- Lab 10 due **Sunday**
- Office hours **today!! 3-5pm (in 240)**
- **Ninja session tonight!**
Ord(..) and Chr(..)
Using `ord(..)` and `chr(..)`

- We can use `ord(ch)` to obtain a numerical representation of a character.

- When we compare characters (when searching or sorting, for example), we are really comparing their numerical representations.

- We can use `chr(int)` to convert an integer back into a character.
Example of using ord/chr to create a cipher

Create a cipher that can encode a string as a list of numbers, and then decode the list of numbers to form the original string. (Practice ord/chr)

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```python
def main():
    # two hidden messages, use chr(..) to decode them
    hidden1 = [72, 97, 112, 112, 121, 32, 70, 114, 105, 100, 97, 121, 33]

    decoded1 = decode(hidden1)
    print(decoded1)

    decoded2 = decode(hidden2)
    print(decoded2)
```
Example of using ord/chr to create a cipher

```python
def encode(message):
    """Return an encoded version (list of integers) of the message (string)."""
    encoded = []
    for ch in message:
        encoded.append(ord(ch))  # use built-in ord(..) function
    return encoded

def decode(encrypted):
    """Return the decoded message (string) from a list of integers."""
    message = ""
    for num in encrypted:
        message += chr(num)  # use built-in chr(..) function
    return message
```
Overloading operators in classes
Example of `len(..)` and `in` operators

```python
# overload the `len(..)` operator
def __len__(self):
    return len(self.players)

# overload the "in" operator
def __contains__(self, player):
    return player in self.players

# now we can use the built-in `len(..)` function
num_players = len(red_sox)
print(num_players)

# now we can use the "in" operator
player = red_sox.getRandomPlayer()
print(player)
if player in red_sox:
    print("in team")
else:
    print("not in team!")
```