Introduction to Computer Programming

Lecture 7
More Ifs, Ands, Ors, and Nots
Three forms of *if* statement

# Here is the first form  *if*

```python
my_number = 2
guess = int(input(“Guess a number (1-5):”))

if guess == my_number :
    print(“You guessed my number”)```
Three forms of *if* statement

# Here is the second form  *if-else*

```python
my_number = 2
guess = int(input("Guess a number (1-5):"))

if guess == my_number :
    print("You guessed my number")
else :
    print("Sorry, you are wrong")
```
Three forms of *if* statement

# Here is the third form  *if-elif-else*

```python
my_number = 2
guess = int(input(“Guess a number (1-5):”))

if guess > my_number :
    print(“Sorry, your guess is too big.”)

elif guess < my_number :
    print(“Sorry, your guess is too small.”)

else :  # catch-all
    print(“You guessed right!”)
```
Another *if-elif-else* example

```python
month = int(input("Enter a month (1-12):"))

if month == 1 :
    print("January")
elif month == 2 :
    print("February")
elif month == 3 :
    print("March")
    ....
else :          # doesn’t match any month
    print("Your month must be 1 - 12")
```
Nested If Statements

if condition :
    if condition :
        statement
    else :
        if condition :
            statement
        else :
            statement
else :
    statement

Decision logic can get very complicated!
More on Strings...

len(“alpha”)  # 5, returns length of “alpha”

Practice: Write a program that inputs two strings, and prints them in order of length, shortest first.
How to Exit a Program

import sys  # make sys module available

if need_to_exit == True:
    sys.exit()  # call ‘exit’ to exit the program
Practice

Red, blue and yellow are primary colors. You can get other colors by mixing them:

- red and blue -> purple
- red and yellow -> orange
- yellow and blue -> green

Write a program that reads in two colors, and prints out the color you get from mixing them.
Review: String functions

str.lower("ABC")  # "abc"

str.upper("abc")  # "ABC"

n = len("today is Tues")  # 13

str.isalpha("abcde")  # true if all letters

str.isdigit("12345")  # true if all digits

str.isalnum("abc123")  # true if all letters and digits
Practice

• Operation that “multiplies” a string

  ‘xx’ * 4   # result is ‘xxxxxxxxx’

• Write a program that reads in 2 strings and prints each one out centered on the line.
Decision Trees for modeling If statements

Question 1?

- Yes
  - Question 2?
    - Yes: Answer 1
    - No: Answer 2

- No: Answer 3
Loan Qualification
make more than $50,000

Salary $\geq 50,000$?

yes

Get a Loan

no

No Loan
.... And same job for at least 3 years

Salary >= $50,000?
  yes
  Years worked >= 3 ?
    yes
    Get Loan
    no
    No Loan
  no
  No Loan
Or have a salary $\geq$ $100,000$

- Salary $\geq$ $50,000$?
  - yes
  - no

- Years worked $\geq$ 3?
  - yes
  - no

- Get Loan
  - yes
  - no

- Salary $\geq$ 100,000?
  - yes
  - no

- Get Loan
  - yes
  - no

- No Loan
Example: Bank Marketing

Salary >= $50,000?

Salary >= 100,000?

Offer loan at good interest rate

Offer special promotion

Have a nice day!