ECS15

while
Overview

- Keep going
- Use a **while** loop.
- **while** Boolean:

  - Do statements in block

- **while** loop **iterates** through block
While loop example

count = 0
while count < 10:
    count = count+1
print (count)
While loop example

- How to use while loop to detect correct inputs?
While loop example

choosing = True
while choosing:
    answer = raw_input("Choose h or t: ")
    if answer == "h" or answer == "t":
        choosing = False
In rps program

- How to keep playing until the user decides to quit?
  - Valid inputs: “r”, “p”, “s”, or “q”
- Boolean variable **picking**
- True while we still need to pick r,p,s
  - A bad input or a good input that is not “q”
- Set it to False when the user decides to quit
- Handles BOTH bad inputs and a regular game
- See rsp2.py
Infinite loop

- One of the classic programming bugs
- Get out of it using CRTL-c (hold down control key and type c)
- Repeat after me: CRTL-c
Compound interest

- Say you invest $100 and make 7% annually
- After one year you have:
  $100 + $100*7/100 = $107
  You made $7.00
- If you leave it invested, and make another 7% the next year, you have:
  $107 + $107*7/100 = $114.48
  You made $7.49
 Compound interest

- The more you have the more you make
“Compounded monthly”

- Instead of computing and adding interest every year, do it every month.
- Use interest rate of \((7/12)\% = 0.583\%\)
- Because you add a little to the balance each month, you make a bit more when compounded monthly than when compounded annually.
- This is called the Effective Interest Rate
Compute Effective Interest Rate

- Write a program to calculate it.
- Use a while loop to iterate through 12 months.
- What about when the principal is not $100?
- EIR = (balance-principal) *(100/principal)
- Read eir.py
Interest on a debt

- When you are paying interest, compound interest is a bad thing!
- Credit cards compound monthly, so if your rate is 15%, you really are paying...
Compound interest program

- Original debt is $10,000
- Every month, make a payment and pay interest
- Loop until debt is paid off
Similar to calculators on Web

What will it take to pay off my balance?

Inputs

Amount you owe $10,000
Future monthly charges $0
Future monthly payments $350
Interest rate 12.00%
Annual fee $0
Desired months to pay off 12

Predicted rate change

- None
- An increase of 1.00% per year
- A decrease of 1.00% per year

Debt Management Tools

- Get Out of Debt Planner
- Impact of Interest Rate
- Lower Rate Worth Fee?
- Consolidate My Debt?
- Consolidate My Cards?
- What Will It Take to Pay Off My Balance?
- See All Calculators

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