Lab 8, CS 112

Recursion
Review and Practice Examples

GEORGE MASON UNIVERSITY

Where Innovation Is Tradition

Recursion - Review

- Way of programming in which a function calls itself until a condition is met:

- Two parts:
  - Base case/ termination condition:
    Define when to terminate the recursion
  - Recursive case:
    Define the recursion function

If a problem can be broken down into multiple identical subproblems, and the result of the base case is a known constant value, you can use recursion to solve it.

Practice 1 (Ungraded)

Given a number, compute the sum of its digits using recursion:

```
Input : 12345
Output : 15

Input : 45632
Output :20
```

```
def sumDigit( n ):
    if n == 0:
        return 0
    return (n % 10 + sumDigit(int(n/10)))
```

Copy/Paste the above code and try it out

Practice 2 (Ungraded)

Print a given string in reverse using recursion:

```
Input:
"programming"
Output:
g
n
i
m
m
a
r
g
o
r
p
```

```
def print_reverse(str):
    if len(str) == 0:
        return

    r = str[0]
    print_reverse(str[1:])
    print(r)
```

Copy/Paste the above code and try it out

Lab Task 8

- ➔ Name your file according to the format: gmuID_2XX_Lab8.py
- ➔ **Your** gmuID **is your netID** not your G-number!
- ➔ 2XX means your lab section number.
- ➔ Submit to the Lab 8 folder in the main Blackboard course shell.