Hacettepe University
Computer Engineering Department

Programming in python

BBM103 Introduction to Programming Lab 1
Week 12

Fall 2016

Multiplication Example: RECURSIVE Solution

$$a*b = \underbrace{a + a + a + a + \ldots + a}_{\text{b times}} = \boxed{a + a*(b-1)}$$

b-1 times

```
def mult_recursive(a, b):
    if b == 1:
        return a
    else:
        return a + mult_recursive(a, b-1)
```

Base case

Recursive Step

Factorial Example: RECURSIVE Solution

$$n! = n*(n-1)*(n-2)*(n-3)* \ldots * 1$$

- **Base Case:** if $n = 1 \rightarrow 1! = 1$
- **Recursive step:** $n! = n * (n-1)!$

```
def factorial(n):
    if n == 1:
        return 1
    else:
        return n * factorial(n-1)
```

Base case

Recursive Step