

## CIS 125 Principles of Programming Logic

### Five Ways of Writing and Using a User-Defined Function

#### Example #1: Data Passed In, Data Passed Out

```
def calculateAmountOwed(credits):  
    amount_owed = credits*100+50  
    return amount_owed  
  
credits = int(input("How many credit hours will you be taking?"))  
amount_owed = calculateAmountOwed(credits)  
print("Your total tuition amount is", amount_owed, "dollars.")
```

#### Example #2: Data Passed In, No Data Passed Out

```
def calculateAmountOwed(credits):  
    amount_owed = credits*100+50  
    print("Your total tuition amount is", amount_owed, "dollars.")  
  
credits = int(input("How many credit hours will you be taking?"))  
calculateAmountOwed(credits)
```

#### Example #3: No Data Passed In, Data Passed Out

```
def calculateAmountOwed():  
    credits = int(input("How many credit hours will you be taking?"))  
    amount_owed = credits*100+50  
    return amount_owed  
  
amount_owed = calculateAmountOwed()  
print("Your total tuition amount is", amount_owed, "dollars.")
```

#### Example #4: No Data Passed In, No Data Passed Out

```
def calculateAmountOwed():  
    credits = int(input("How many credit hours will you be taking?"))  
    amount_owed = credits*100+50  
    print("Your total tuition amount is", amount_owed, "dollars.")  
  
calculateAmountOwed()
```

#### Example #5: Alternate to Example #2: Multiple Data/Variables Passed In, No Data Passed Out

```
def calculateAmountOwed(credits, hours, fees):  
    amount_owed = credits * hours + fees  
    print("Your total tuition amount is", amount_owed, "dollars.")  
  
credits = int(input("How many credit hours will you be taking?"))  
hours = float(input("How much is a credit hour?"))  
fees = float(input("How much are fees?"))  
calculateAmountOwed(credits, hours, fees)
```

## Another Example of Four Ways to Create and Use User-Defined Functions

Meal Calculator: No Data In, No Data Out

```
def billCalc():
    meal = float(input("Please enter your meal cost: "))
    tip = float(input("Please enter your tip amount (e.g. .15 for 15%): "))
    bill = meal + (meal * tip)
    print("Your total bill comes to: $%.2f" % bill)

billCalc()
```

Meal Calculator: Data In, No Data Out

```
def billCalc(meal, tip):
    bill = meal + (meal * tip)
    print("Your total bill comes to: $%.2f" % bill)

meal = float(input("Please enter your meal cost: "))
tip = float(input("Please enter your tip amount (e.g. .15 for 15%): "))
billCalc(meal, tip)
```

Meal Calculator: Data In, Data Out

```
def billCalc(meal, tip):
    bill = meal + (meal * tip)
    return bill

meal = float(input("Please enter your meal cost: "))
tip = float(input("Please enter your tip amount (e.g. .15 for 15%): "))
bill = billCalc(meal, tip)
print("Your total bill comes to: $%.2f" % bill)
```

Meal Calculator: No Data In, Data Out

```
def billCalc():
    meal = float(input("Please enter your meal cost: "))
    tip = float(input("Please enter your tip amount (e.g. .15 for 15%): "))
    bill = meal + (meal * tip)
    return bill

bill = billCalc()
print("Your total bill comes to: $%.2f" % bill)
```

Meal Calculator: No Data In, Two Data Out

```
def billData():
    meal = float(input("Please enter your meal cost: "))
    tip = float(input("Please enter your tip amount (e.g. .15 for 15%): "))
    return meal, tip

meal, tip = billData()
bill = meal + (meal * tip)
print("Your total bill comes to: $%.2f" % bill)
```

## Another Program Written Five Ways

```
def calcPay():                                     # Method 1: No data in, No data out
    DEDUCTIONS = .05
    TAX_RATE = .15
    hours = float(input("How many hours did you work this week? "))
    rate = float(input("What is your hourly pay rate? "))
    weekly_pay = (hours * rate) - ((hours * rate) * (DEDUCTIONS + TAX_RATE))
    print("Your weekly pay is: $", weekly_pay)

calcPay()
```

```
def calcPay():                                     # Method 2: No data in, Data out
    DEDUCTIONS = .05
    TAX_RATE = .15
    hours = float(input("How many hours did you work this week? "))
    rate = float(input("What is your hourly pay rate? "))
    weekly_pay = (hours * rate) - ((hours * rate) * (DEDUCTIONS + TAX_RATE))
    return weekly_pay

weekly_pay = calcPay()
print("Your weekly pay is: $", weekly_pay)
```

```
# Method 3: Data in, No data out
def calcPay(DEDUCTIONS, TAX_RATE, hours, rate):
    weekly_pay = (hours * rate) - ((hours * rate) * (DEDUCTIONS + TAX_RATE))
    print("Your weekly pay is: $", weekly_pay)

DEDUCTIONS = .05
TAX_RATE = .15
hours = float(input("How many hours did you work this week? "))
rate = float(input("What is your hourly pay rate? "))
calcPay(DEDUCTIONS, TAX_RATE, hours, rate)
```

```
def calcPay(deductions, tax_rate):                 # Method 4: Data in, Data out
    hours = float(input("How many hours did you work this week? "))
    rate = float(input("What is your hourly pay rate? "))
    weekly_pay = (hours * rate) - ((hours * rate) * (deductions + tax_rate))
    return weekly_pay

weekly_pay = calcPay(.05, .15)
print("Your weekly pay is: $", weekly_pay)
```

```
def calcPay(hours, rate):                           # Method 5: Data in; No data out; Two global
                                                    (avoid)
    global DEDUCTIONS
    global TAX_RATE
    weekly_pay = (hours * rate) - ((hours * rate) * (DEDUCTIONS + TAX_RATE))
    print("Your weekly pay is: $", weekly_pay)

DEDUCTIONS = .05
TAX_RATE = .15
hours = float(input("How many hours did you work this week? "))
rate = float(input("What is your hourly pay rate? "))
calcPay(hours, rate)
```