Program Construction

Programming

Know the Question
Know the answer

Program:
the bridge between the two

Program Parts

Define
Input
Process
Output

Define

What kind of data is there?

How many variables are needed?

Define the Variables to be used.

Input

What are the inputs to the program?

Understand the data being collected.

Construct the input statements.

Process

What is going to happen to the data?

What variables will be used?

What formulas will be needed?

Process

What calculation are needed?

What decisions are needed?

What loops are needed?

Output

What are the outputs (displayed,etc)?

What variables are needed?

What formatting is needed?

Testing

Sunshine

Any Data

Error Data

Form

On Brightspace
Handout button
Select
 Program Analysis sheet

Example

Write a program to:

     Collect name, Amount owed.

     Calculate 12 monthly payments

     Display:

          Name

          Amount owed

          Monthly payment

Collect name, Amount owed.

```python
pymt = 0.0
name =input("Enter customers name: ")
oamt = input('Enter amount owed: ')
```

Calculate 12 monthly payments

owed = float(oamt)

pymt = owed /12

Display:
        Name
        Amount owed
        Monthly payment

print('Customer Name: ',name)

print('Amount Owed: ', owed)

print('Monthly Payments: ', pymt, ' for 12 months')

Put all of it together

The program

```
pymt = 0.0
name =input("Enter customers name: ")
oamt = input('Enter amount owed: ')
owed = float(oamt)
pymt = owed /12
print('\n'*3)
print('\n-----------\n')
print('Customer Name: ',name)
print('Amount Owed: ', owed)
print('Monthly Payments: ', pymt, ' for 12 months')
print('\n'*5)
```

Change to function - input

```
def getinput(msg):
    data1 = input(msg)
    return  data1
```

Function - output

```
def report(name,owed,pymt):
    print('Customer Name: ',name)
    print('Amount Owed: ', owed)
    print('Monthly Payments: ', pymt, ' for 12 months')
    return
```

The program (with functions)

```python
def getinput(msg):
    data1 = input(msg)
    return data1
def report(name,owed,pymt):
    print('\n'*2)
    print('Customer Name: ',name)
    print('Amount Owed: ', owed)
    print('Monthly Payments: ', pymt, ' for 12 months')
    print('\n'*2)
    return
```

```python
def payment():
    pymt = 0.0
    name = getinput('enter customer name: ')
    oamt = getinput('Enter amount owed: ')
    owed = float(oamt)
    pymt = owed /12
    report(name,oamt,pymt)
payment()
```

Done