

**1. Expressions (0 points)** Evaluate each of the following expressions:

```
10 + 2 * 5
```

```
512 % 10
```

```
'foobar' + 'baz '
```

```
11 // 2
```

```
11 / 2
```

**2. Loops (0 points)**

(a) What is the output from the following lines of code?

```
for i in range(3):  
    print('hello ')
```

(b) What is the output from the following lines of code?

```
a = 0  
for j in range(4):  
    a = a + 2  
print(a)
```

**3. Short Answer (0 points)**

(a) What is the difference between an algorithm and a program?

(b) What are two ways to write comments in Python?

#### 4. Short Coding (0 points)

- (a) Convert the following math function to a Python expression:

$$(1 + \frac{r}{n})^{nt}$$

- (b) Write a function named **mean** that takes 3 parameters and calculates the arithmetic mean of the parameters, and returns the result.

#### 5. Debug (0 points)

Consider the following function that is supposed perform multiplication by repeatedly adding.

```
def simplemult(m, n):  
    '''  
    Calculates m * n by adding m + m + m + ... + m  
    '''  
    tot = 0  
    for times in range(n):  
        tot = tot + m  
    return tot
```

Answer the following questions:

What does this function return when called with the inputs 4, 3?

How can it be fixed so that it returns the proper value?

#### 6. Larger Coding Problem (i.e. Take-home) (0 points)

Suppose that you want to start saving a certain amount each year month in an investment account that compounds interest monthly. To determine how much you expect to have in the future, write a function

```
invest(investment, rate, years)
```

that returns the income earned by investing **investment** dollars every month in an investment account that pays the given rate of return, compounded monthly (**rate** / 12 percent each month.)