MSPA 400 Session 5 Python Solutions

Module 1

Exercise 1: Using the functions defined above check the calculations in Lial Section 8.1 Examples 3 and 9, and Section 8.2 Example 3.

```
print ('Example 3, 3 letters is %r') %perm(3,3)
print ('Example 3, two of three letters is %r') %perm(3,2)
P=(factorial(11))/(factorial(1)*factorial(4)*factorial(4)*factorial(2))
print ('Example 9, Mississippi is %r') %P
print ('Example 3, Sales is %r') %comb(10,3)
```

```
Example 3, 3 Letters is 6
Example 3, two of three letters is 6
Example 9, Mississippi is 34650
Example 3, Sales is 120
```

Exercise 2: Using the concept of a "for" loop discussed in Section 10.3 of "Think Python", write a function that calculates factorials without using a recursive approach.

```
# Code for calculating a factorial using a for loop.

def fact(n):
        if n == 0:
                return 1
        else:
                result=1
                for k in range(0,n):
                        result = result*(k+1)
                return result
```

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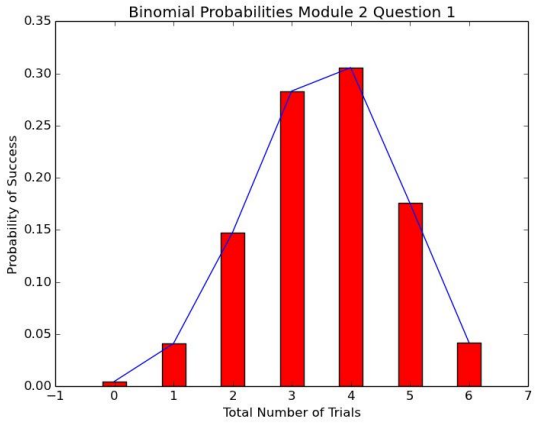
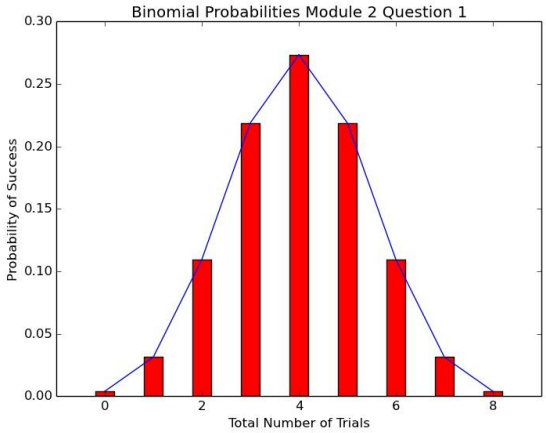
Module 2:

Exercise 1: Using a variation of the code and functions defined, check the calculations in Lial Section 8.4 Examples 2 and 3. Note the distributions which are produced.

print ('Example 2 College Students %r') %round(binomial(6,3,0.59),4)
Example 2 College Students 0.2831



print ('Example 3 Coin Toss %r') %binomial(8,7,0.5)
Example 3 Coin Toss 0.03125



Exercise 2: Using the function "binomial" as defined in the code, write the code to verify the calculations in Lial Section 8.5 Example 7.

F=0*binomial(5,0,.787)+1*binomial(5,1,.787)+2*binomial(5,2,.787)
F=F+3*binomial(5,3,.787)+4*binomial(5,4,.787)+5*binomial(5,5,.787)
print('Expected Number of Females in Sample is %r') %round(F,3)

Expected Number of Female in Sample is 3.935