In [3]:
```
#2.1 write a function to check whether a number falls in a given range

# Given range
X = 1000 #start of range
Y = 7000  # end of range

def checkRange(num):
   # using comaparision operator
   if num in range(X, Y):
       print('The number {} is in range ({}, {})'.format(num, X, Y))
   else:
      print('The number {} is not in range ({}, {})'.format(num, X, Y))
checkRange(5000)
```

```
The number 5000 is in range (1000, 7000)
```

In [6]:
```
#2.2 Some board games require you to reduce the number of cards you are holding by half, rounded down
#For instance, if you have 10 cards, you would reduce to 5 and if you had 11 cards you would also reduce to 5.
#Write a program that asks the user to enter how many cards they have and print out what their hand would reduce to
#under this rule.

TotalCards = eval(input('How many cards do you have: '))
print('After reducing you have:', TotalCards // 2)
```

```
How many cards do you have: 11
After reducing you have: 5
```

In [7]:
```
##2.3 Write a program that asks the user to enter a positive integer.
#Then generate a random number between that number and 10 more than that number
#and print the letter A that many times on the same line.

from random import randint

inputNumber = eval(input('Enter a positive integer: '))

num_times = randint(inputNumber,inputNumber+10)

for index in range(num_times):
    print('A', end=' ')
print()
```

```
Enter a positive integer: 5
A A A A A A A A A A A A A A A
```

In [9]:
```
#2.4 This is a very simple billing program.
#Ask the user for a starting hour and ending hour, both given in 24-hour format (e.g., 1 pm is 13, 2 pm is 14, etc.).
#The charge to use the service is $5.50 per hour. Print out the user's total bill.
#You can assume that the service will be used for at least 1 hour and never more than 23 hours.be careful to take care
#case that the starting hour is before midnight and the ending is after midnight
startHour = eval(input('Enter starting hour (0-23): '))
endHour = eval(input('Enter ending hour (0-23): '))
if(endHour>=startHour):
    print('Total: ',(endHour-startHour)*5.50)
else:
    print('Total: ',(24-startHour + endHour)*5.50)
```

```
Enter starting hour (0-23): 11
Enter ending hour (0-23): 14
Total:  16.5
```

In [14]:
```
#5 One way to estimate probabilities is to run what is called a computer simulation.
#Here we will estimate the probability of rolling doubles with two dice (where both dice come out to the same value).
#To do this, run a loop 10,000 times in which random numbers are generated representing the dice and a count is kept of
#many times doubles appear.Print out the final percentage of rolls that are doubles.

from random import randint

count = 0
for index in range(10000):
    roll1 = randint(1, 6)
    roll2 = randint(1, 6)
    if roll1 == roll2:
        count += 1
print('Percentage of doubles:', 100*count/10000)
```

```
Percentage of doubles: 16.4
```