1) Write a function to check whether a number falls in a given range

In [2]:
```
def test_range(n):
    if n  in range(10,146):
        print("The given number is in the range")
    else:
        print("The given number is not in the range")
n = int(input("Guess a number: "))
test_range(n)
```

```
Guess a number: 8
The given number is not in the range
```

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. With 12 cards you would reduce to 6. 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.

In [14]:
```
number1 = int(input("please enter a number: "))
s = number1//2
print("Your cards should reduce to: ",s)
```

```
please enter a number: 11
Your cards should reduce to:  5
```

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.

In [11]:
```
import random
num = int(input("please enter a number: "))
r = random.randint(num,num+10)
print(r)
print("A"*r)
```

```
please enter a number: 6
9
AAAAAAAAA
```

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 of the case that the starting hour is before midnight and the ending time is after midnight.

In [26]:
```
time1= int(input("please enter start time(in 24 hour format): "))
time2= int(input("please enter stop time(in 24 hour format): "))
if time1<time2:
    p= 5.50 * (time2 - time1)
    print("your bill is $",p)
elif time1==time2:
    print("your bill is $ 5.50")
else:
    p= 5.50 * (24+time2-time1 )
    print("your bill is $",p)
```

```
please enter start time(in 24 hour format): 12
please enter stop time(in 24 hour format): 14
your bill is $ 11.0
```

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 how many times doubles appear. Print out the final percentage of rolls that are doubles.

In [36]:
```
count = 0
for i in range(10000):
    r1=random.randint(1,6)
    r2=random.randint(1,6)
    if r1==r2:
        count+=1
print(count)

percentage= (count/10000)*100
print("final percentage of rolls that are doubles",percentage)
```

```
1658
final percentage of rolls that are doubles 16.580000000000002
```

In [ ]:
```

```