ASSIGNMENT-2

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

Solution:
```
def test_number(n,T1,T2):
    if n in range(T1,T2):
        print(n,'is in the given range')
    else:
        print(n,'is not in given range')

test_number(10,1,8)
```

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.

Solution:
```
import math
def board_game(cards):
    cards=cards/2
    cards=math.floor(cards)
    print(cards)

board_game(3)
```

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.

Solution:
```
import random
a=int(input('enter input number'))
b=a+10
n=random.randint(a,b)
print(n, 'is a random number')
list1=[]
for i in range (n):
    list1.append('A')
print(list1)
```

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.

Solution:
```
S_hour=int(input('enter starting hour:'))
E_hour=int(input('enter ending hour:'))
if E_hour < 23 and S_hour> 0:
        work=E_hour-S_hour
        amount=work*5.5
        print('The amount paid is $',amount)
else:
        print('Wrong information')
```

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.

Solution:
```
import random
from collections import Counter
dice=[]
n=10000
for i in range(n):
    x=random.randint(1,n)
    dice.append(x)
d=dict(Counter(dice))
keys = [k for k, v in d.items() if v == 2]
length=len(keys)
print(length)
percentage=(length/10000)*100
print(percentage)
```