Assignment - 2

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

```
def test_range(n):
    if n in range(0,100):
        print( " %s is in the range"%str(n))
    else :
        print("The number is outside the given range.")
test_range(35)
```

Output: 35 is in the range

```
test_range(135)
Output : The number is outside the given range.
```

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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.

```
cards=int(input("How many cards are you holding? "))
rem=cards//2
print(f"Your hand would reduce to {rem}")
```

Output : -

How many cards are you holding? 11
Your hand would reduce to 5

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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
num=int(input("enter a positive integer: "))
if num>=1:
    x=randint(num,num+10)
else:
    print("please enter a valid input")
print("A"*x)
```

Output:-

```
enter a positive integer: 10
AAAAAAAAAAAAAAAAAAAA
```

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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.

```
start=int(input("enter the start time in 24 hour format: "))
end=int(input("enter the end time in 24 hour format: "))
if start<end:
    time=end-start
else:
    time=24-(start-end)
bill=time*5.50
print("Your total bill is", bill)
```

Output:-

```
enter the start time in 24 hour format: 13
enter the end time in 24 hour format: 23
Your total bill is 55.0
```

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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.

```
count=0
from random import randint
for i in range (1,10001):
    dice1=randint(1,6)
    dice2=randint(1,6)
    if dice1==dice2:
        count+=1
percent=(count/10000)*100
print(f"The doubles percentage is {percent}%")
```

Output:-

```
The doubles percentage is 16.2%
```

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