Assignment – 2

Program -1

```
# Assignment 2
# 1. Write a function to check whether a number falls in a given range
num = int(input("Enter the number:"))
s = int(input("Enter the starting range number:"))
e = int(input("Enter the ending range number:"))
if num in range(s,e+1):
  print(num ,"falls in range between", s ,"and", e)
```

Output

```
Enter the number:4
Enter the starting range number:2
Enter the ending range number:100
4 falls in range between 2 and 100
```

Program -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. With 12 cards you would reduce to 6. Write a program that a
sks the user to enter
# how many cards they have and print out what their hand would reduce to under
this rule.
import math

no_OfCards = int(input("Enter the total no. of cards:"))
half_Cards = math.floor(no_OfCards/2)
print("No. of cards after reduction under this rule:",half_Cards)
```

Output

```
Enter the total no. of cards:9
No. of cards after reduction under this rule: 4
```

Program -3

```
# 3. Write a program that asks the user to enter a positive integer. Then gener
ate a random number between
# that number and 10 more than that number and print the letter A that many tim
es on the same
# line.
import random

num = int(input("Enter a number:"))
start = num
end = num + 10
rn = random.randint(start,end)
print("Random number between ",start,"and ",end,":", rn)
print(rn * "A")
```

Output

```
Enter a number:2
Random number between  2 and  12 : 6
AAAAAA
```

Program -4

```
# 4. This is a very simple billing program. Ask the user for a starting hour an
d 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 a
t least 1 hour and never
# more than 23 hours. Be careful to take care of the case that the starting hou
r is before midnight and
# the ending time is after midnight.

starting_hour = int(input("Enter the starting hour in 24-hour format"))
ending_hour = int(input("Enter the ending hour in 24-hour format"))
sch_Dolr = 5.50
if starting_hour > ending_hour:
  hours = (24-starting_hour) + ending_hour
elif starting_hour < ending_hour:
  hours = (24-starting_hour) - (24 - ending_hour)
if hours >=1 and hours <= 23:
  print("User's Bill: $",hours*sch_Dolr,"for",hours,"hours.")
```

Output

```
Enter the starting hour in 24-hour format5
Enter the ending hour in 24-hour format18
User's Bill: $ 71.5 for 13 hours.

Enter the starting hour in 24-hour format22
Enter the ending hour in 24-hour format8
User's Bill: $ 55.0 for 10 hours.
```

Program -5

```
# 5. One way to estimate probabilities is to run what is called a computer simu
lation. 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 repres
enting the dice and
# a count is kept of how many times doubles appear. Print out the final percent
age of rolls that are
# doubles.

import random

count = 0
for turn in range(10001):
  dice1 = random.randint(1,6)
  dice2 = random.randint(1,6)
  if dice1 == dice2:
    count +=1
countP = float(count / 10000) * 100
print("Final percentage that rolls out doubles:",countP)
```

Output

```
Final percentage that rolls out doubles: 16.32
```