

Assignment-2-set-4-Q3

In [2]:

```
import numpy as np
from scipy import stats
from scipy.stats import norm
```

In [3]:

```
# For No investigation  $P(45 < X < 55)$ 
# For Investigation  $1 - P(45 < X < 55)$ 
```

In [4]:

```
# find Z-Scores at  $x=45$ ;  $z=(s\_mean-P\_mean)/(p\_SD/\sqrt{n})$ 
 $z=(45-50)/(40/100**0.5)$ 
z
```

Out[4]:

-1.25

In [5]:

```
# find Z-Scores at  $x=55$ ;  $z=(s\_mean-P\_mean)/(p\_SD/\sqrt{n})$ 
 $z=(55-50)/(40/100**0.5)$ 
z
```

Out[5]:

1.25

In [6]:

```
# Find No Investigation  $P(45 < X < 55)$  using  $z\_scores = P(X < 50) - P(X < 45)$ 
stats.norm.cdf(1.25)-stats.norm.cdf(-1.25)
```

Out[6]:

0.7887004526662893

In [7]:

```
stats.norm.interval(0.7887, loc=50, scale=40/(100**0.5))
```

Out[7]:

(45.00000495667348, 54.99999504332652)

In [8]:

```
# For Investigation  $1 - P(45 < X < 55)$ 
1-0.7887
```

Out[8]:

0.21130000000000004

In []: