

# Q4 (C)

## Import Libraries

```
1 | import math
```

## Iteration 1

```
1 | init_weight = 1 / 11
2 | print(f'Initial Weight: {init_weight}')
```

```
1 | Initial Weight: 0.09090909090909091
```

```
1 | epsilon = 1 * init_weight
2 | print(f'Epsilon: {epsilon}')
```

```
1 | Epsilon: 0.09090909090909091
```

```
1 | alpha = 0.5 * math.log((1-epsilon)/epsilon)
2 | print(f'Alpha: {alpha}')
```

```
1 | Alpha: 1.151292546497023
```

## Correctly Classified Points

```
1 | exp_correct = init_weight * math.exp(-1*alpha)
2 | print(f'Correctly Classified : {exp_correct}')
```

```
1 | Correctly Classified : 0.028747978728803445
```

```
1 exp_incorrect = init_weight * math.exp(alpha)
2 print(f'Incorrectly Classified : {exp_incorrect}')
```

```
1 Incorrectly Classified : 0.2874797872880345
```

## Normalization

```
1 z = 1 * exp_incorrect + 10 * exp_correct
2 print(f'Normalization Factor: {z}')
```

```
1 Normalization Factor: 0.5749595745760689
```

```
1 w2_correct = exp_correct / z
2 print(f'W2_Correct: {w2_correct}')
```

```
1 W2_Correct: 0.049999999999999996
```

```
1 w2_incorrect = exp_incorrect / z
2 print(f'W2_InCorrect: {w2_incorrect}')
```

```
1 W2_InCorrect: 0.5000000000000001
```

## Weighted Error

```
1 weighted_error = w2_incorrect * 1
2 print(f'Weighted Error: {weighted_error}')
```

```
1 Weighted Error: 0.5000000000000001
```