

Student Information

Full Name : Onat Subaşı

Id Number : 2448835

a)

We use the following formula in order to determine the size of the Monte Carlo study

$$N \geq 0.25 \left(\frac{z_{\alpha/2}}{\epsilon} \right)^2$$
$$N \geq 0.25 \left(\frac{2.33}{0.03} \right)^2$$
$$N \geq 1508.02$$

Therefore, we have decided to have a study size of 1509. We will be using examples 5.9 and 5.11 to generate samples from the Poisson and Gamma distributions respectively. In each iteration of the main loop, we will generate a random variable and based on its value, we will calculate the total weight of each type of ship and record it in the total array. Then, we will determine the probability of the total weight exceeding 300,000 tons by taking the average of cases where the weight exceeds 300,000 tons, considering a total of 1509 cases.

```
Estimated probability = 0.117959
Expected weight = 260644.754610
Standard deviation = 34142.819558
>> |
```

Figure 1: Output of the octave code.