For the inputs:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | The amount of time needed for one plane to land: | The amount of time need for one plane to take off: | The average amount of time between arrival of planes to the landing queue: | The average amount of time between arrival of planes to the takeoff queue: | The maximum amount of time that a plane can stay in the landing queue without running out of fuel and crashing: | The total length of time to be simulated: |
| 1 | 15 | 25 | 30 | 10 | 60 | 1000 |
| 2 | 30 | 25 | 30 | 10 | 60 | 1000 |
| 3 | 15 | 50 | 30 | 10 | 60 | 1000 |
| 4 | 15 | 25 | 60 | 10 | 60 | 1000 |
| 5 | 15 | 25 | 30 | 20 | 60 | 1000 |
| 6 | 15 | 25 | 30 | 10 | 120 | 1000 |

For the outputs:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | The number of planes that took off in the simulated time: | The number of planes that landed in the simulated time: | The number of planes that crashed because they ran out of fuel before they could land: | The average time that a plane spent in the takeoff queue: | The average time that a plane spent in the landing queue: |
| 1 | 20 | 34 | 0 | 368.85 | 15.2353 |
| 2 | 8 | 27 | 5 | 379.125 | 31.1852 |
| 3 | 10 | 34 | 0 | 414.7 | 21.1176 |
| 4 | 31 | 16 | 0 | 375.323 | 13.8125 |
| 5 | 20 | 34 | 0 | 273.5 | 15.2353 |
| 6 | 20 | 34 | 0 | 368.85 | 15.2353 |

**Findings and discussion from the results**

From the above two tables, for each trial I changed the value of one single argument (more specifically I doubled its value when compared to the first trial), and kept the rest of the possible factors the same as the first trial. So in this way we can learn which factor contributed the most to the reason that planes crashed due to the shortage of fuel.

When comparing the first trial and the second trial, we know from the table that the only difference between the two is that the amount of time needed for one plane to land is doubled from the first trial. And that caused 5 more planes to crash during the second trial. That is reasonable, since if there are planes landing during the process, no planes are allowed to land, and thus they have to wait in the landing queue for a longer time, in which case increase their possibility of crashing.

Since the landing operation always takes priority rather than the takeoff operation, therefore when doubling the number for the amount of time needed for one plane to take off, there aren’t any planes crashing during the third trial. From the table we know 0 planes crashed during the process. So do the rest of the cases, there aren’t any planes crashing in those trials. Therefore, we know they don’t have much of an impact on causing the planes to crash due to the shortage of fuel while waiting in the landing queue.