Let:

P: The file system is locked

Q: The new messages will be queued

R: The system is functioning normally

S: The new messages will be sent to the buffer

~P → Q

~P R

~Q → S

~P →S

~S

: Consistant spec row

Truth table:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| P | Q | R | S | ~P | ~Q | ~P→Q | ~PR | ~Q→S | ~P→S | ~S |
| T | T | T | T | F | F | T | F | T | T | F |
| T | T | T | F | F | F | T | F | T | T | T |
| T | T | F | T | F | F | T | T | T | T | F |
| T | T | F | F | F | F | T | T | T | T | T |
| T | F | T | T | F | T | T | F | T | T | F |
| T | F | T | F | F | T | T | F | F | T | T |
| T | F | F | T | F | T | T | T | T | T | F |
| T | F | F | F | F | T | T | T | F | T | T |
| F | T | T | T | T | F | T | T | T | T | F |
| F | T | T | F | T | F | T | T | T | F | T |
| F | T | F | T | T | F | T | F | T | T | F |
| F | T | F | F | T | F | T | F | T | F | T |
| F | F | T | T | T | T | F | T | T | T | F |
| F | F | T | F | T | T | F | T | F | F | T |
| F | F | F | T | T | T | F | F | T | T | F |
| F | F | F | F | T | T | F | F | F | F | T |

**Explanation**: There is a row where **P** is true, **Q** is true, **R** is false, and **S** is false where all the specs are true. Therefore, the system specs are consistent.

**Process:**

If I were to give any advice to future students that would have to work on this problem, I would say to take their time and double check what they’ve written down frequently. I looked back at my answers countless times making sure my table makes sense and I didn’t make any typos. For a hand-in assignment like this, a single mistyped letter can make all the difference. Don’t be too lazy to go back on your answers and see if there is anything that doesn’t make sense. I would also recommend writing the table by hand first, personally it helped and it’s easier to read than on screen. To finalize, make sure you double check on everything you’ve written in case there were any mistakes or typos and try writing it by hand first it will help make things less confusing and give you the chance to find mistakes early on.

Field using logic math

Artificial intelligence has progressed exponentially over the past decades. Robots now practically have a mind of their own and a lot of that is thanks to logic math. The logic math we’ve covered in this course is a good base to the more complex logic math we see in AI nowadays. A field that uses logic math as its groundwork is an Artificial Intelligence Engineer. The role of an Artificial Intelligence Engineer is to develop intelligent algorithms, which have the ability to learn, predict and analyze. Ultimately their goal is to create artificial intelligence that thinks and reasons like a real human being. As said on the **Data ScienceTech Institute** website “*The aim of Artificial Intelligence is to create machines capable of recording, learning, and analysing data in order to predict events, trends, …*”. Along those branches you can find different types of AI software developers, from customer service bots on a website, to automated home cleaning robots, to humanoid artificial intelligence. The field is very broad, an Artificial Intelligence Engineer can program AI to analyse data to predict events and trends for marketing as well as create a software that responds to human interaction. So how does logic math fit into all this? Well, AI is, to its core, multiple if-else statements. If, the person interacts with the AI in a way, how will the AI respond to the interaction. If one option is picked, but not the other, how will that effect the output the AI sends. We can look at it from a simple perspective, let’s say the engineer is tasked to create an artificial intelligence bot that will help with support on a website. The user will pick one of many options and depending on which options are picked, there will be different kinds of feedback. In logic math words, if option A is true and B is false, the AI must respond in a certain way or vice versa. Another example for this field of work can be a company that sells hair products. Having an AI to predict which hair gel is more popular than the others can help the company anticipate which products and customers to target. In other words, when the AI receives data, if product A is purchased in Canada more than product B, showcase product A, or if product A and B are purchased without product C, the company knows that C is not a very popular product. To summarize, the Artificial Intelligence Engineering field requires creativity, knowledge in programming languages and a background in computer sciences. It is very broad and may open doors to many different job opportunities. It uses parts of logic math to direct the AI software for it to learn, analyse and respond.

References: (Data ScienceTech Institute, Artificial Intelligence Engineering Job Description, https://www.datasciencetech.institute/jobs/artificial-intelligence-engineer-job-description/)