3. Doctor's Aid Scenario

For this aid utility, patient name, diagnosis accuracy, patient's disease name, disease incidence, treatment name, and the treatment risk probability will be given in an input file named "doctors_aid_inputs.txt" an example of this file is provided in the attachment. Note that the clinician does not have to give the commands in the same order. Each type of command can be used in any order in the input.

Command types in the input file are as follows:

1. Create a new Patient: The "create" command will add a new patient to the system. For example, the "create Hayriye, 0.999, Breast Cancer, 50/100000, Surgery, 0.40" command means that a patient named Hayriye has been diagnosed with breast cancer with a method that has a 99.9% accuracy ratio. The disease is seen in Turkey in 50 people in every 100,000 population; this phenomenon is known as incidence. Doctors suggest surgery as treatment, and the application risk of the surgery is calculated as 40%. The output of this command will be "Patient Hayriye is recorded." For another case, the output will be "Patient Hayriye cannot be recorded due to duplication.". You do not have to check for other cases. Please note that the input data are artificially produced. They are not indicating real-world scenarios.
2. Delete an existing Patient: The "remove" command will remove an existing patient from the system. For example, "remove Deniz" means the user wants to delete the patient named Deniz. The output of this command will either be "Patient Deniz is removed." or (if there is no such patient) "Patient Deniz cannot be removed due to absence.".
3. List All Patients with their Information: The "list" command will be used to list the complete information in the system. For example: "list"
   Note that there is no additional operand for this command.

Patient Name	Diagnosis Accuracy	Disease Name	Disease Incidence	Treatment Name	Treatment Risk
Hayriye	99.9%	Breast Cancer	50/100,000	Surgery	40%
Deniz	99.99%	Lung Cancer	40/100,000	Radiotherapy	65%
Toprak	98%	Prostate Cancer	21/100,000	Hormonotherapy	20%

4. Patient's Probability of having the Disease: The "probability" command will be used to calculate and show/help the actual fatality probability of a patient. For example, the "probability Hayriye" command will have an output of "Patient Hayriye has a probability of **33.32%** of having breast cancer." This calculation is made according to the information above in creating part (**Yes, it is true!**). (See also: FP) (∓0.02% is OK). The other case is "Probability for Hayriye cannot be calculated due to absence."
5. A Patient's Recommendation for a Particular Treatment: The "recommendation" command will be used to give a system recommendation to a patient about whether to

have the treatment. As you might notice, the decision is fatally important! For example, the "recommendation Hayriye" command will result in either "System suggests Hayriye to have the treatment." or "System suggests Hayriye NOT to have the treatment.". The recommendation calculation will compare the patient's probability of having the disease and the treatment risk probability. The above command will result in "System suggests Hayriye NOT to have the treatment." in the output file because **40% > 33%**. This assignment will have no confusion, no equal probabilities, or no misspelled inputs. The other case will be "Recommendation for Hayriye cannot be calculated due to absence.". You do not have to check for input correctness. The only case you should check is when a patient's name is given (in any command) whether the patient exists in the system.

Also, outputs of each command's step will be provided to an output file named "doctors_aid_outputs.txt".