

Assignment 3: Automated Requirements Tracing (15% of the total grade)

CS 5127/6027 Requirements Engineering (Fall 2022)

IMPORTANT DATES

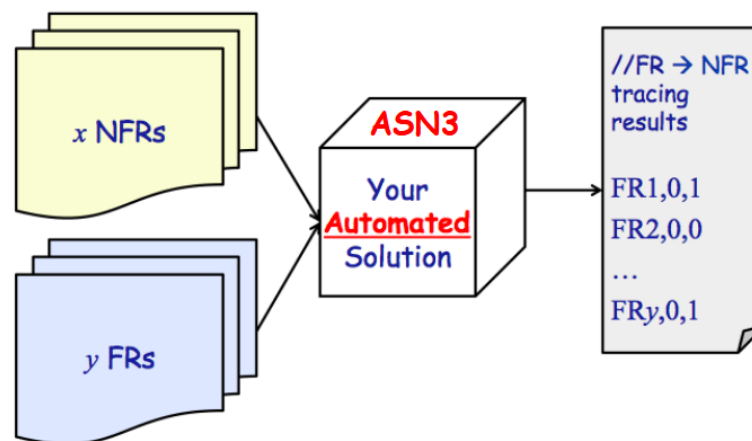
Tuesday (10/11/2022): Release Assignment 3 (in class & on Canvas)
 Thursday (10/27/2022): Run your Assignment 3 solution & submit your tracing results to Canvas within 15 minutes, right after the guest lecture on 10/27/2022.

INPUT (AS OF 10/11/2022; MORE WILL BE PROVIDED & ANNOUNCED LATER)

- Three (3) non-functional requirements (NFRs) and sixty (60) functional requirements (FRs) are provided in txt format (**requirements-3nfr-60fr.txt**)
- The formatting information of NFRs, FRs, and the tracing results is provided in txt format (**formatting-readme.txt**)

DESCRIPTION

Each student is required to work **individually** on Assignment 3. Assignment 3 asks you to develop an algorithm for automatically linking FRs and NFRs. The following figure shows a conceptual sketch of your Assignment 3 solution (your automated tool) in the context of requirements tracing.



where x is the number of NFRs and y is the number of FRs. On the output (right hand) side, there shall be y rows, each beginning with the FR_id, followed by the tracing results outputted by your Assignment 3 solution: 1 means the FR and the NFR is related (traceable to each other), and 0 means otherwise.

GRADING

On Thursday (10/27/2022; during class time), you will be asked to run your Assignment 3 solution **three times**, and then upload your three output files in txt format to Canvas for grading. These three runs will be based on existing input data, and new input data with more FRs and more NFRs.

NOTES

- You must follow the input and output requirements specified in **formatting-readme.txt** for your Assignment 3. Failing to comply with the formatting requirements can result in very poor grade of your Assignment 3. The instructor will show the grader programs in Tuesday's class (10/18) and release these grader programs on Canvas. **You are strongly recommended to check your output files against the grader programs.**
- You can use any programming language (Python, Java, JavaScript, C/C++, C#, etc.) and any development environment (Jupyter Notebook, Eclipse, Visual Studio, etc.) to implement your Assignment 3 solution.
- The lectures will cover sample solutions to Assignment 3, and some references will be uploaded to the course website. However, you are encouraged to research and develop your own tracing algorithm.
- The final evaluation of your Assignment 3 solution will be based on such metrics as recall, precision, and F2 measuring trace retrieval effectiveness.
- The late penalty is 20% earned grade off for each day being late (up to two days). If you have difficulty in meeting the submission deadline (in class, Thursday, 10/27/2022), then please contact the instructor at least one week before the deadline.