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The problem statement was also passed as input to the class diagram generator and the following timings were recorded:

**Analysis Time (AT):** 12.58s

**Diagram Generation Time (DGT):** 10.50s

**Overall time (OT):** 23.08s

It is to be noted that the recorded time is taken to be the average of worst case scenario, which is when when the tool is ran for the first time.

….…………………………………………………………………………….

1. The disparity seen between the outputs generated by the testers and the tool is assumed to be the subjective assessment of the problem statements by the testers unlike the objective and rule based assessment done by the tool.

**Table 6.9: Inferences table**

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristic** | **Traditional Method** | **Class Diagram Generator Method** | **Inferences** |
| Accuracy - Classes | 60.92 (%) | 90 | The tool shows higher accuracy in identifying classes. |
| Accuracy - Attributes | 55.42 | 88.3 | The tool shows higher accuracy in identifying attributes classes. |
| Accuracy - Methods | 38.36 | 100 | The tool shows higher accuracy in identifying methods of classes. |
|  |  |  |  |
| Sensitivity - Classes | 68 (%) | 90 | The tool has higher sensitivity when identifying classes. |
| Sensitivity - Attributes | 44 | 94.32 | The tool has a higher sensitivity when identifying attributes. |
| Sensitivity - Methods | 45.33 | 100 | The tool has higher sensitivity when identifying methods. |
|  |  |  |  |
| Diagram Analysis Time | 112.4 (seconds) | 12.58 (seconds) | The tool analyzes input statements faster than an average tester. |
| Diagram Generation Time | 278.5 | 10.50 | The tool generates output faster than an average tester. |
| Overall Time | 390.9 | 23.08 | The overall time required by this tool is far smaller than what is required by an average tester. |

**Table 6.10: Comparison Table between similar tools**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Support** | **CM-Builder** | **LIDA** | **GOOAL** | **NLOOML** | **DC-Builder** | **RACE** | **RAUE** | **RAPID** | **ACDG** |
| Classes | Yes | User | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Attributes | Yes | User | Yes | Yes | Yes | Yes | Yes | No | Yes |
| Methods | No | User | Yes | Yes | No | Yes | No | No | Yes |
| Associations | Yes | User | Semi-NL | No | Yes | Yes | Yes | Yes | Yes |
| Multiplicity | Yes | User | No | No | No | No | Yes | No | No |
| Aggregation | No | No | No | No | Yes | Yes | Yes | Yes | No |
| Generalization | No | No | No | No | Yes | Yes | Yes | Yes | No |
| Instances | No | No | No | No | No | No | No | No | No |

CHAPTER 8

CONCLUSION

The research to compare the effectiveness of the proposed class diagram generator was performed by comparing the class diagrams generated by the proposed system to the diagrams generated by 10 final year computer science students and has been found that the diagrams generated by the proposed system were more accurate and the diagrams were generated faster. The research can also be further extended to find the optimum level of automation, such that the proposed system and other such systems can offer the right balance between automation and freedom to the software engineers. In addition, the research can also be extended to find the cost to companies which implement the proposed system.

The tool also supports basic relationships among classes showing is-a or has-a relationships. Support for more complex relationships haven’t been fully developed for the tool and the research can be extended in this regard. The tool can be further improved by adding features that allow the users to edit the existing diagram as well introduce new elements into the diagram. This will allow the tool to vastly contribute to the Design phase if the Software Development Life Cycle in the long run.

Therefore, with the proposed class diagram generator, the class diagrams were generated from the input natural language text and have shown to be much faster and accurate than the traditional method of class diagram generation, which can extensively conclude that artificial intelligence can make the design phase of software development a lot more efficient for software developers.