

## ABSTRACT

Instant messaging is applications that allow short message exchanges in real time and it is used by million people in the world to communicate with friend, coworker, and family. Variation of messenger it is so many and it can be use as additional service at email and social network. Hence, we decide to construct E3D Messenger which divide into four parts there are protocol, server, compression, and client application.

In this minor thesis, E3D messenger protocol has been designed. Design phase protocol has started from requirement specification, then doing service design to produce service specification. In protocol design, service specification is used to produce protocol specification. It is described with Format Description Technique SDL (Specification and Description Language). E3D messenger specification consists of two blocks there are E3D client and E3D server. E3D client consist of three processes there are command reader, coder, and processor whereas E3D server consist of four processes there are listening, service, forward, and database.

Protocol specification is analyzed with reachability analysis and simulation tools Cinderella SDL 1.3 that used too at design phase. Analysis and simulation show that formal specification E3D messenger protocol is valid. There is no deadlock, error syntax, error semantic and also expected behavior.

Keyword: *E3D messenger* protocol, SDL