MASTER THESIS – INTEGRATION TEST OF ASYNCHRONOUS MESSAGE PASSING APPLICATIONS

Background
Mobile networks are used all over the world and are the cornerstone in the networked society, where everything that benefits from a connection shall be connected. To support the vast amount and diversity of data expected in future networks, Ericsson are developing products to drive and support the networked society. The subjects for Master Thesis are defined to investigate and develop algorithms, architecture, tools etc. to support huge increase of speech, data and massive IoT for Radio Access Networks.

Thesis Description
The software in Ericsson 5G Radio Base Stations is component based and developed in C++. Each component is multithreaded with an asynchronous message interface. It is necessary with a lightweight integration test environment where each component could be tested in isolation.

The work consists of literature studies of recommendations and design patterns for integration test. Based on this, analyze and evaluate existing framework and propose how integration test can be used for these components, e.g. usage of dependency injection, test of multithreaded execution etc. Analyze the speed in both development as well as benefits in terms of quality and its advantages and disadvantages. Investigate, compare, and propose patterns for integration test of asynchronous message passing components developed in C++. The main purpose of this work is to evaluate and improve the existing framework.

The thesis will be concluded with a result presentation for the Ericsson team.

Qualifications
This project aims at students in electrical engineering, computer science, computer engineering or similar. Good knowledge of Integration test, Google test, pthreads and sockets and C++. A basic understanding of mobile networks is helpful.

Extent
1-2 students, 30hp each

Location
Ericsson AB Mjärdevi, Linköping

Preferred Starting Date
Spring 2018

Keywords
C++, Mobile Telecommunication, Integration test, Google test, 5G

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