**Testing my Bachelor Thesis Application**

Testing is a component of software development that involves running a software system through a series of experiments with the goal of finding errors. The purpose of testing is to improve software quality by ensuring that it meets the expected behavior. Testing can be applied at various stages of the software development process, including unit testing, integration testing and system testing. Each stage of testing helps to identify and correct different types of errors and the overall process helps to ensure that the software is functional. By detecting defects early on, testing saves time and money by reducing the need for costly bug fixes and rework later in the development process.

My Bachelor Thesis has a lot of features. The most important ones are the following: register (to register, the user must upload a photo of his ID card along with other required fields, such as email and password. The registration process interacts with the Face Extraction API and Cloudinary for uploading the profile picture), login (users can either log in with their email and password or use their Google account. Two-Factor Authentication is also present for traditional logins, with users receiving an SMS with a code via Twilio), selling bicycles (which interacts with the Image Classification API and Sidekiq to verify uploaded photos), buying bicycles (which uses PayPal for money transfer). The admin has also 2 important features: cancel the payment (if the proof is not satisfactory and refund the buyer), mark the bicycle as shipped). Users can also manage their account, add bicycles to favorites, report sellers, send suggestions, chat with admins, filter bicycles by different fields, admins can chat with users and with other admins, do user accounts manipulation etc.

Unit testing should be performed on each individual feature, such as the registration process, login, selling bicycles, and buying bicycles, to verify that each function performs as expected. For example, in the registration feature, unit testing should ensure that user input validation works properly, the Face Extraction API is called and the returned values are correctly handled, and the profile picture is uploaded to Cloudinary without any errors.

Integration testing should be performed when modules are combined, such as when the Image Classification API and Sidekiq are integrated to verify uploaded photos. Integration testing should ensure that the combined modules work seamlessly together and that there are no conflicts or issues when they interact. A suitable integration strategy would be a bottom-up approach, where individual modules are tested first and then combined until the entire system is tested.

System testing should be performed to ensure that the entire system works as expected. In my bachelor thesis, scenarios such as user registration, login, bicycle selling, and bicycle buying should be tested to ensure that all the features work correctly together. In addition, scenarios such as payment processing, user account manipulation, and user-admin communication should also be tested to ensure that they are working as expected.