

## Introduction

The analog to digital converter (ADC) is a device that converts the applied analog voltage to its equivalent digital form. A variety of analog to digital converter configurations are available in chip form. Each of which has special characteristics that are suitable for specific application. Successive approximation analog to digital converter is the most widely used analog to digital conversion method. It has a much faster conversion time than other methods with the exception of the flash conversion method. It also has a fixed conversion time that is the same for any value of the analog input.

The project mainly aimed to build and simulate a successive approximation digital to analog converter using the Design Manager software.

This report contains four chapters, where **chapter 1** gives the theoretical background of the analog to digital converters with more details about the SAC. **Chapter 2** provides details about operational amplifiers and the comparator **Chapter 3** includes details, implementation and testing of control logic and register. The digital to analog converter implementation and testing is in **chapter 4**. Finally all conclusions and recommendations for future work are detailed at the end of the report.