CHAPTER I

INTRODUCTION

1.1 Background

The TSP is named after the concept of a hypothetical salesman who is planning a route to visit his customers in various neighbouring towns, but wants to maximize profits by using the shortest route a helpful example to illustrate the usefulness of the problem: businesses around the world employ TSP-solving or related problem-solving software to help optimize their travelling needs, including in particular large courier companies that need to delivery millions of packages daily, and must reduce the expense of delivery vehicles and cut down travel time in any way possible, but also airliners, postal services, consumer GPS route-planning software, video-game path finding AI, and even electronics manufacture, in which a robot soldering arm must have an efficient path through the solder points to ensure maximum production over time.

The ACO algorithm has good potential for problem solving and recently has attracted a lot of attentions specifically for solving NP-Hard set of problems. One of the earliest best works for solving the TSP uses the ACS (Ant Colony System) is presented in (Dorigo & Gambardella, 1997). They use the ACS algorithm for solving the TSP and they claim that the ACS outperforms other nature-inspired algorithms such as simulated annealing and evolutionary computation.

1.2 Scope

This project used Ant Colony Optimization Algorithm to calculate and find the optimization route from a number of cities. And also used Google maps API for the mapping optimization route.

1.3 Objective

This project was created to get the optimization route for traveling sales problem. First, user can select which cities will be visited. Then, this application will calculate and save the distance between every city in matrix. After that, ant colony optimization algorithm will compute the optimization route for traveling sales problem and get the directions from the Google map api.