

FINAL YEAR PROJECT REPORT  
DIPLOMA IN MECHANICAL ENGINEERING  
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TO PREPARE A COMPUTER PROGRAM TO DETERMINE  
THE APPARATUS DEW POINT OF THE  
AIR CONDITIONING UNITS

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## PREFACE

The main objective of this project is to prepare a suitable computer program to determine the apparatus dew point of the cooling coil of the air conditioner. In order to compute this, there is a need to know the the psychrometric properties of the moist air. Among the psychrometric properties that we need to calculate are dry-bulb temperature, specific humidity, relative humidity, specific volume, enthalpy, partial dry air pressure, partial wet vapour pressure and the saturation pressure.

Usually, the psychrometric values of the air stated above are retrieved from the psychrometric chart which is usually tedious. Throughout our work, we try as much as possible to solve this malady by doing the calculation or manipulation of the properties using computer. This can be done by using the correct thermodynamic formulae and combine them into a computeable program.

The project also helps us to deepen our computing knowledge. The exposure to the task given helped us to understand better how a particular task can be solved using computers. It is our hope that by the end of this project we can use the computer more effectively and wisely.

## II

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## 1.0 INTRODUCTION

### 1.1 The purpose of air conditioning

The term air conditioning can be defined as a field which deals with the automatic control of an atmospheric environment either for the comfort of human being or animal or for the proper performance of some industrial or scientific processes. This means that the air to be conditioned must be purified and other variables of the air like temperature, relative humidity must be control efficiently within prede-termined limit. When dealing with comfort the main features are to produce an environment which is comfortable to the majority of occupant while industrial or scientific conditioning will be concerning with the proper functioning of that particular industrial or scientific process.

### 1.2 Requirement of an air conditioning systems

In order for the system designed to function as required, it has to undergo or perform certain processes. This too applies to air conditioning system design. The main roles or functions an air conditioner has to perform are listed as follow:

- a. Controlling the temperature of air at a desired value by heating or cooling processes.
- b. Controlling the relative humidity of air by humidification or dehumidification.
- c. Controlling the air velocity at a desired speed  
Controlling the ratio of fresh air intake to the recirculated air for the purpose of ventilation.
- e. Controlling the purity of air by filtration.

#### The need to computerise

Engineering is an activity which has always been related with the development and application of new tools technologies. Unsurprisingly, we find that the advance development of computers has great impact towards this profession nowadays.