**ANKARA UNIVERSITY**

**FACULTY OF ENGINEERING**

**DEPARTMENT OF COMPUTER ENGINEERING**



**COM 491/492/461/462 PROJECT REPORT**

**Project Title**

**Student Name Surname**

**Student ID No**

**Supervisor**

**Date (Month, Year)**

# ABSTRACT

This document is prepared as both a guide and a template for the reports that Ankara University Computer Engineering students will write at the end of their final year projects. It describes and shows how the title page and other compulsory parts should be. In addition, it includes the formatting details as well as suggestions and warnings about the contents.

# TABLE OF CONTENTS

# 1. INTRODUCTION

In the Department of Computer Engineering at Ankara University, students submit a report at the end of their final year projects. This document is prepared to help students with writing the reports and to create a template for these reports. This guide and template is prepared in May 2020 and it replaced the previously used template and formatting rules. It is based on the Ankara University, Graduate School of Natural and Applied Sciences, Thesis Writing Guidelines and existing Internship Report Guide and Template. If there is an issue for which you cannot find an answer here, please refer to the thesis writing guidelines. The project reports must obey the formatting and content related rules described in this document. It is advised that you read this document once carefully and completely before writing the report, refer to it as needed when you are writing, and check your report once it is completed thoroughly one last time according to the explanations here.

The report should be prepared for A4 (210 x 297 mm) paper and both sides of paper should be used when printing. It is a good idea to convert your file to a pdf file before taking it to the print shop as it will prevent unexpected changes in formatting. The printouts should be bound using a spiral or classical method. A CD/DVD should be attached to the inside of the back cover in a CD/DVD envelope. This disc should contain an electronic copy of the report as well as source codes, documents, etc. related to the work carried out in the project. The libraries, program setups, etc. required for compiling or running the source codes should also be included in the disc. The steps for executing the codes must be described in a text file (README file). You should write the information on the report title page such as name, date, etc. also on the disc with a suitable marker.

The report should be prepared using word-processing software (Microsoft Word, OpenOffice Writer, etc.) or Latex document preparation system. This template is prepared with Microsoft Word. If you use another program, make sure the formatting settings are arranged as described. Some parts of the text on the title page of this document are marked with red color to indicate that they should be modified. You should change the color to black after writing your own name, number, etc.

The report should be written with clear, grammatically correct, and formal English. You are advised to make use of software and online sources for correct punctuation, spelling, and grammar.

The part of the report from the Introduction until the Bibliography should be at least 15 pages. Font size should be 12 pt (points) and font type should be Arial. If needed, smaller font size can be used in tables or formulas. Punctuation marks such as full stop (.) and comma (,) are written adjacent to the preceding word and one space character follows them. The page margins should be 2.5 cm at the top, bottom, left, and right. The text should be justified (lines should end at the same level both on the right and on the left). Line spacing should be 1.5 lines except in parts like Bibliography and Table of Contents. In these parts and additionally for the captions, quotations, footnotes, and equations, the line spacing should be 1.0 (single). The first lines of the paragraphs should be at the same level with others (i.e., they should not be further indented) and the space between two paragraphs should be one blank line (if the paragraph spacing values in the paragraph settings are 0). If you want to arrange the same amount of space through paragraph settings instead of manually, before/after spacing for paragraphs should be set so that there is 12 pt x 1,5 line spacing = 18 pt space. There should not be extra space between items in a bulleted or numbered list (see below for an example list). Main sections (Abstract, Table of Contents, Introduction, ..., Conclusion, Bibliography, Appendices) should always start in a new page. Lower level titles (such as those numbered 1.1, 1.2.1) should not start in a new page but follow the preceding paragraph. There should be a blank page after the title page so that when printed, Abstract will be on the right.

## 1.1.  Titles and Page Numbers

The reason for this subsection is to show visually how the titles should be organized. Note that this document itself is formatted according to the requirements. All titles should be written with the same font as the text, 12 pt Arial. However,

- first level titles should be in boldface, completely with capital letters and centered;
- second level titles are again in boldface but underlined, left aligned and only the first letters of each word should be capital. In this type of writing the first

letter of some words such as "a/an/the" and conjunctions like "but/with/etc." should be kept small (unless it is the first word).

- Third level titles should be same as the second level ones but will not be underlined and will be placed one Tab character to the right.

When deciding the sections of the report, you should avoid going into unnecessary detailed subsections and pay attention to the importance of the sections. **You should avoid using titles more than three levels.** Relatively too short or too long sections can be thought as indicators for a possibly better, different organization. For example, it may not be generally necessary to use titles for one or two paragraph sections. Or, situations like a section being 9-10 pages when others do not exceed two or three pages can be made more balanced with reorganization.

Page numbers should be placed at the bottom of the pages in the center as in this document and all pages except the title page should be numbered. The beginning of the report until Introduction (Abstract, Table of Contents, etc.) should be numbered with small Roman numbers "i, ii, iii, iv, v, vi, ..." but starting with the Introduction, numbers should go as "1, 2, 3, ...". The page numbers in this document are arranged in this manner. If you need to do this yourself in a different program, you will need to find out how. For example, in Microsoft Word, it becomes possible when you use sections breaks.

## 1.2. <u>Sections of the Report</u>

The main part of the report starts with the Introduction and and ends with the Conclusion. **The parts between the Introduction and Conclusion** can be called the body but it is not a good idea to use the word Body as a section title. The titles and their number here **can differ between different reports.** The conclusion should be followed with a bibliography and that in turn should be followed with appendices if there are any. The only compulsory index/list before Introduction is Table of Contents however, if there are a lot of symbols/abbreviations, figures, or tables in a report, indices such as Symbols/Abbreviations, List of Figures, List of Tables can be used. Some suggestions for each part are given in Section 3 of this report.

# 2. ABOUT THE CONTENTS

## 2.1. Citations, Quotations, and Footnotes

All the resources (books, articles, web pages, lecture notes, etc.) that are used during the internship work or the report writing must be listed under the Bibliography section. How this should be done is explained in detail under section 3.7 Bibliography. **Every resource that you cite inside the report must appear in the Bibliography section.**

If you use the same sentences as the resource, it is called a prose quotation. These must be placed inside quotation mark ("...") and the original work must be cited. If you are repeating the original information/idea with your own words citation is enough.

Citations should be formatted according to the "surname and year" system. In this system you should write the surname of the referred author, put a comma, and then write the year of the work. For example, citing a single author work should be like (Heimentz, 1986). If there are more than one author, you should write the first authors surname and append "et al." (e.g., (Rubiera et al.., 1997)).

If you are citing more than one work at the same point, they should be in chronological order and separated with semi colons (;). For example, (Ayfer, 1959; Bilgen, 1973; Kuru vd., 1986). You do not need to repeat the name when citing multiple works of the same author (Bilgen, 1968; 1973). If the same author has multiple works in the same year, these can be separated using small letters a, b, c, … as in (Habulin vd., 2001a; b). If author's name is mentioned in the sentence, it is enough to write only the year in parenthesis. E.g., Turing (1950) suggested a test to evaluate whether a machine displays intelligence similar to a human.

Electronic newspapers, journals, magazines, encyclopedias, books and various web sources can be cited with the name of the institution and access date. For example, (IBM, 2012). Sources where the author or an institution is not specified can be cited by using the word **Anonymous**. For web sources, the publication or last update date (if known) and access date should be specified.

At any point in the main part of the report, if there is a short explanation which will disturb the logical flow of the argument, it can be written as a footnote (not exceeding a few lines) at the bottom of the page.

## 2.2. Figures and Tables

It is good practice to use figures and tables that will help with the explanations and discussions. Those that are mentioned (i.e., necessary) in the text and that are not very big/long should be placed around the point that they are mentioned. Others, i.e., large ones or those that are not completely needed by the text such as long code segments, should be placed in the Appendices. All drawings, marks, symbols, numbers, and text in the figures and tables should be printed (not hand drawn) and they should be big enough to be readable.

Figures and tables should appear on the same or following page where they are mentioned. They should not overflow to the margin areas. Those that do not fit should be made smaller, split, or placed in the Appendices. **Do not forget that figures, tables etc. are included to make explanation easier. A flow of figures without any related text, or conversely, only writing text to express something that could be explained easily with a figure, or including unnecessary figures to fill up space are bad features for a report.**

If there are figures or tables as extra documents or requiring a different paper size, they can be folded and placed in the appendices. If it is not possible to include an appendix in the binding, a pocket can be arranged for it inside the back cover. If a long table must be placed inside the text, it should be split appropriately to fit the page limits. The rest of the table on the next page(s) does not need a new table number and can be given the same number by mentioning that it is a continuation.

### 2.2.1. Numbering and Captions for Figures and Tables

All figures and tables should be numbered. Numbering should be done in each main section independently. For example, Figure 1.1, Figure 1.2, …, Figure 2.1, ... and Table 1.1, Table 1.2, … The numbering should not consider titles of level 2 or higher.

For example, if we include a figure right here, it **should not be numbered as 2.2.1.1** because we are in section 2.2.1.

Figure captions should be written below the figure using single line spacing and there should be half a line (6pt) space between the figure and the caption. The table captions should be similar but only written above the table. An example figure obeying all these rules can be seen in Figure 2.1 and an example table in Table 2.1.
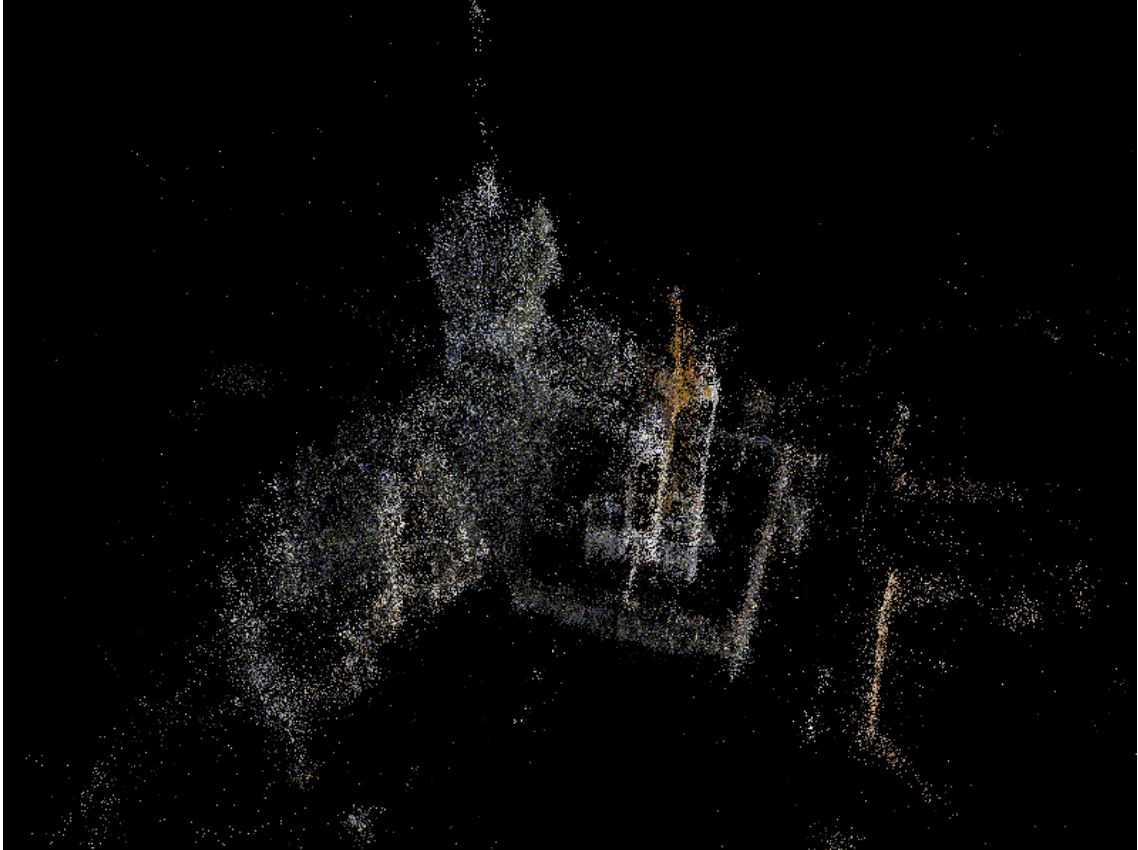


Figure 2.1. Point cloud of Endeavour space shuttle on launc platform.

Table 2.1. Some geometric measurements from real objects and their point clouds.

| | | Gerçek değerler (cm) | Nokta bulutu değerleri | Bağıl hata |
|---|---|---|---|---|
| Koni vazo | Çap | 8,15 | 8,45726 | 0,0377 |
| | Yükseklik | 36,6 | 37,94335 | 0,0367 |
| Kalemlik | Taban kenarı | 6,5 | 6,71759 | 0,0335 |
| | Yükseklik | 15 | 15,49953 | 0,0333 |
| Su ısıtıcısı | Dar çap | 6,3 | 6,51421 | 0,034 |
| | Geniş çap | 8,1 | 8,42003 | 0,0395 |
| | Yükseklik | 23 | 23,87275 | 0,0379 |
| Testi | En geniş çap | 6,9 | 7,12828 | 0,0331 |
| | Yükseklik | 13,6 | 14,08976 | 0,036 |

# 3. PARTS OF THE REPORT

The report should overall have a logical flow. Both the sentences and the sections should follow each other in terms of content and structure. **It is important to remember that the main reason for writing the report is to describe your work, not the preliminary studies or technologies used.**

## 3.1. Abstract

Abstract should fit one page. You can use 11pt font or smaller line spacing if needed. This section should clearly and briefly state the aim and scope of the work, methods used, and results acquired. There should not be any subsections under this section. Keep in mind that this section is a summary of the whole report and it is not a place to define concepts, go into details, or extend with unnecessary sentences.

## 3.2. Table of Contents

All section and subsection titles including the Bibliography section and Appendices (if any) should be listed in this table together with their page numbers.

## 3.3. Introduction

In the Introduction section, which is the first section of the main part of the report, you should give the reader some introductory information about the subject and then clearly present the aim and scope of the work and the report. The aim is what you want to communicate (explain, describe, criticize, evaluate, discuss, etc.) to the reader. The scope is about how the subject is approached and addressed. If there are related previous works, these can be mentioned in the Introduction (or alternatively, in a separate second section). If an extraordinary or arguable naming, classification, or concept is used in the work or report, a justification on this should be given in this section. Parts of the topic that were deliberately left out can also be explained here if there are any. Lastly, you can give an outline of the report by summarizing the contents (scope) of each report section.

### 3.4. <u>Body Parts</u>

The sections of this part (titles between Introduction and Conclusion) can be different for each report. Some examples are:

- Motivation, Related Works/Theoretical Background, Materials and Methods, Results
- Project Organization and Planning, Requirements, Architectural Design, User Interface Design, Implementation, Testing (or Experiments)

You should determine the sections of your report according to the nature of the work you are trying to explain and the style you prefer. While determining these sections - and in general, writing the report - **do not forget that the main target is to communicate what you did during the project**. **Background information, libraries or software you learned or used** can be included but **going into unnecessary details or making the report mostly about them instead of your work is an unwanted situation that will affect your grade negatively**.

Sections at the same title level should approximately be equally important. Consider splitting a very long section into multiple sections or combining a very short one with others. Do not forget that a logical flow should exist between the sections too. For example, a subsection should be somehow related to its parent section. (There may be some subsections in this template that does not obey this suggestion because some subsections are only created to show example subsections.)

If you worked on different tasks, you can separate these as different sections. If you worked on a part of a larger project, you can first talk about the project in general and then go into the details of the part you worked on. If you are preparing the report as a group, you can organize the report according to your division of tasks.

In general, some example topics that you can discuss in the report are:

- Summaries of related previous work carried out by the author or others.
- Explanations of related theoretical concepts.

- Information about the hardware or software you used, such as their features. If a piece of hardware/software is a global standard, a documented project, or a commercial product, giving brief information and referring to the related resources is enough. However, if you modify this hardware/software or if you are involved in its development, you should explain the work in more detail.

- Explanations about the methods you used in your work. If the method is a well-known existing one, giving brief information and referring to the related resources is enough. But if there is a small or big modification to the method, details should be given.

- Presenting clearly and discussing results if there are any. It is also common to compare such results with those from other works. Such discussions, comparisons, and comments can be a separate section or they can be included inside the Conclusion section.

- The performance evaluation part of the project you developed after your work should be written in this section. As a performance evaluation, metrics such as application runtime, memory used, graphics card usage, etc. should be used. After these elements are specified, a short discussion section about performance should be written and any parts that can be improved should be specified. This section should be written before the conclusion section and must be included in the report.

### 3.5.  Conclusion

Perhaps the most important goal of this part is to emphasize the relation between the aim and scope given in the Introduction and all the information given in the body parts. In other words, you want to underline that you successfully explained what you wanted to communicate at the beginning. In order to do this, you can repeat the aim and scope, go over the important points and findings, and/or discuss the feasibility of the method or interpretation.

The outcome of the project should be briefly but clearly given here. In other words, the results (problems, observations, comments, etc.) from the project/development tasks that you were a part of should be summarized. If it is possible, the results

acquired should be evaluated with comparisons. It is also possible to provide feasible, well-thought suggestions that follow the results.

## 3.6.   Bibliography

The title Bibliography should be left aligned and unnumbered. In this section, you should list all the resources (books, articles, web sources, lecture notes, etc.) that helped you during the work and report writing. **You should not quote anything without proper citation. Failure to do so is called "plagiarism" and it is a serious unethical behavior that requires sanction. Be careful about this issue.**

The resources should be ordered according to the surname of the (first) author alphabetically. If there are resources by the same author(s) from different years, these should be ordered chronologically. Resources by the same author(s) and from the same year should be ordered in terms of the order of appearance in the report and by adding a letter to its year.

The author names that were omitted in the report by using "et al." should be given here in the list. How to include different types of resources are described in Appendix 2 with examples. You should obey these standards.

## 3.7.   Appendix/Appendices

Explanations that will disturb the logical flow of the report while reading and that are too long to be footnotes, inference of a formula, detailed and broad experimental results, example calculations, figures that are large or similar to others, etc. should be given here.

For each separate topic, you should choose an appropriate title and number them as "Appendix 1, Appendix 2, ...". If there only one such part, then use the overall name Appendix without any numbers but if you have more than one, put them under one higher level title which will be plural Appendices. Multiple appendices also require an appendices title page at the beginning (after Bibliography). Each appendix title should also be included in the Table of Contents.

**APPENDICES**

**Appendix 1.** <u>**Report Titles and Numbering**</u>

**Appendix 2.** <u>**Bibliography Format and Examples**</u>

## Appendix 1. Report Titles and Numbering

| |
|---|
| **ABSTRACT** |
| **TABLE OF CONTENTS** |
| **1. INTRODUCTION** |
| ⋮ |
| **N. CONCLUSION** |
| **BIBLIOGRAPHY** |
| **APPENDICES** |

**Appendix 2. <u>Bibliography Format and Examples</u>**

The resources should be given according to the formatting described below.

<u>Books:</u> Surname, Initials of other names. Year. Title. Publisher, pages, city or country.

<u>Articles:</u> Surname, Initials of other names. Year. Title. The journal or conference name, volume (issue/no); pages.

Please make use of the following examples.

Anonim. 1995. Tarım istatistikleri özeti DİE yayını, 22 s., Ankara.

Anonymous. 1991. The state of food and agriculture 1990. FAO, 223 p., Rome.

Bairamov, E., Çakar, Ö. And Çelebi, O.A. 1996. Quadratic pencil of shrödinger operators with spectral singularities. Journal of Mathematical Analysis and Applications, 216, 303-320.

Buttler, G.P. 1965. Early diagnoses in the recent sediments of the trucial coast of the Persian gulf. Ph.D. thesis (unpublished), University of London, 163 p., London.

Castillo, E., Marty, A., Condoret, J. S. and Combes, D. 1996. Enzymatic catalysis in nonconventional media using high polar molecules as substrates, In: Annals of the New York Academy of Science. Dordick, J. S. and Russell, A.J. (eds), The NewYork Academy of Science, pp. 206-211, New York.

Day, R.A. 1996. Bilimsel bir makale nasıl yazılır ve yayımlanır (çeviri: G.A. Altay), 2. Baskı., TÜBİTAK yayını, 223 s., Ankara.

Ekşi, A. 1988. Meyve suyu durultma tekniği. Gıda Teknolojisi Derneği Yayınları: 9, 127 s., Ankara.

Erdik, E. ve Sarıkaya, Y. 1997. Temel üniversite kimyası, Cilt I. Gazi Büro Yayını, 738 s., Ankara.

Front, M.F. and Ross, J.V. US 4678-653, 1985 (*patent gösterimi için örnektir*)

Habulin, M. and Knez, Z. 2001a. Activity and stability of lipases from different sources in supercritical carbon dioxide and near-critical propane. Journal of Chemical Technology and Biotechnology, 76(2), 1260-1266.

Habulin, M. and Knez, Z. 2001b. Pressure stability of lipases and their use in different systems. Acta. Chim. Slov., 48, 521-532.

NOVO NORDISK, 2003. Web sitesi. http://www.novo.dk. Erişim Tarihi: 05.08.2004.

Özbayram, K. 1980. Türkiye'de mantar üretiminin bugünkü durumu ve geliştirme olanakları. Türkiye II. Yemeklik Mantar Kongresi, s.1-10, Yalova.

Öztürk, F. 1997. Kırıkkale ve tuzgölü arasındaki bölgenin manyetik ve gravite anomalilerinin incelenmesi. Yüksek lisans tezi (basılmamış). Ankara Üniversitesi, 78 s., Ankara.

Pieper, C.M. 1998. Introduction to activity based costing. A Technical bulletin from ABC technologies, http://www.abctech.com. Erişim Tarihi: 12.10.2004.

Stern, W.R. 1975. Yazılı görüşme. Batı Avustralya Üniversitesi Tarım Enstitüsü Agronomi Bölümü, Nedland, Avustralya. E mail:

Varol, B. 1992. Doğu Toroslar Geyikdağı Birliğinde orta devoniyen (Şafaktepe Fm) dolomitlerinin petrografisi ve kökeni, Tufanbeyli, Saimbeyli. M.T.A. Dergisi 114 (baskıda),Ankara.