

Türkçe Proje Başlığı

Şirket Adı

<group photo>

Should be 16:9

Resolution should be:

height > 450, width > 800

Proje Ekibi

p1, p2, p3,
p4, p5, p6

Şirket Danışmanı

Dr. IA1, Dr. IA2
Yük. Müh. IA3

Endüstri Mühendisliği Takımı

Akademik Danışman

Prof. Dr. AA1
Doç. Dr. AA2

Dr. Öğr. Üyesi AA3
Endüstri Mühendisliği Bölümü

ÖZET

Özet burada (tr). Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Anahtar Kelimeler: Birinci anahtar kelime, ikinci, üçüncü, dördüncü, en çok beş

Project Title in English

1 Introduction

2 Problem

3 Solution

4 Conclusion

5 Take Your Time To Read This Section

In the remainder of this template, you will find the useful commands such as adding figures, tables and codes. You can use overleaf to easily access all the necessary packages and edit the report collaboratively. To make sure that the format is preserved throughout the book, there are a few rules that must be followed. Read the rules from the .tex file (not pdf).

- Each figure/table should be captioned. Captions should be at the bottom.
- Refer to the table/figure/code like the following example: "which can be seen on Figure 1". The label (argument inside the `\ref` command) can be set by `\label` command inside the definition of the referenced block.
- No need to worry about using the same label with another group.
- Make sure that the images you use are in **png** format, with highest resolution possible, so that it is readable.
- **Inserting tables, mathematical models as images will not be allowed and should absolutely be avoided, write them in latex.**
- Do not use additional packages, if you need a package not listed on this document or the previous latex document at the website, send us an email.

5.1 Upload process

Your group will receive a survey link, where you will upload the files in a zip. Below is the set of rules to be followed while preparing the zip file. Follow this guide to easily download your project from overleaf: https://www.overleaf.com/learn/how-to/Downloading_a_Project

1. Inside the zip, there will be one tex file (this file, which will contain your report, **not main.tex**) and a folder containing the images and bib file. Do not forget to adjust the resource paths inside your tex file accordingly, i.e. groupXX/image1.png, groupXX/bibfile.
2. The folder should be named in "groupXX" format where XX is your group number in **two digits**. Examples to follow: group01, group02, group15. Examples to avoid: GrOup1, group1, grup05, projectShortcode group 55.

3. main.tex and packages are provided to you so that you can compile your report the same way we'll do, so do not include them in the file.

Make sure that images are of **high resolution, use .png format**. For charts, use the export option and increase the resolution (on R, matlab) or save them using the savefig (python-matplotlib) method with dpi>999. Do not use screenshots of code or charts.

If you are confused, feel free to confuse yourself further by reading the latex document at <https://courses.ie.bilkent.edu.tr/ie477/tools-for-report-writing/>. It includes some other functions but it's a bit obsolete.

If you have any issues, you can submit an email containing the overleaf share link to ie477@ie.bilkent.edu.tr, with subject: "GroupXX - Latex issue".

To reference, you should first add the book/article details to the .bib file. Don't bother to fill it manually, you can use bibliography generator like [ZoteroBib](#) and [Mendeley](#), these generators are not the only ones that you can use, even google scholar has a bibtex generator. To cite, you simply pass the label to the \cite command: [Miller \(1984\)](#) or [Balseiro et al. \(2021\)](#); [Charles et al. \(2013\)](#).

6 Mathematical Model

Indices, Decision variables and parameters table, edit its parts as you need:

Table 1: Variables of the model

<i>Indices</i>		<i>Decision Variables</i>	
$j \in J, h \in H, t \in T$		$X_{h,j}^t$	... t
<i>Parameters</i>		$Y_{h,t}$	... h
S	...	$\alpha_{h,t}$	... h at the beginning of period t
$W_{h,1}^t$	...	$Z_{h,t}$	...
$W_{h,2}^t$	...	$I_{h,j}^t$	... h at the end of period t
β	...	<i>Auxiliary Variables</i>	
β	...	P^1	...
θ	...	P^2	...
θ_j	...	$TT_{h,t}^t$	$\begin{cases} 1 & \dots \\ 0 & \text{otherwise} \end{cases}$
$\alpha_{h,1}$	...		
δ	...		

Mathematical model example:

$$\min \max_{h \in H} \sum_{t \in T} \sum_{j \in J} DC_{h,j}^t \quad (1)$$

$$\min \max_{h \in H} \sum_{t \in T} Y_{h,t} \quad (2)$$

$$\text{subject to: } \sum_{h \in H} X_{h,j}^t = S_j^t \quad \forall t \in T, \forall j \in J \quad (3)$$

$$I_{h,j}^t - U_{h,j}^t = X_{h,j}^t + I_{h,j}^{t-1} - W_{h,j}^t \quad \forall t \in T, \forall h \in H, \forall j \in J \quad (4)$$

$$I_{h,j}^t U_{h,j}^t = 0 \quad \forall t \in T, \forall h \in H, \forall j \in J \quad (5)$$

$$SL_{h,j}^t \in \{0, 1\} \quad \forall t \in T, \forall h \in H, \forall j \in J \quad (6)$$

If this is your first encounter with a mathematical model, here's what some of the characters mean (also an example of numbered list):

1. `&`: Alignment character, aligns the text before itself (until the beginning or another `&` character, whichever is before) with the same blocks before and after its current line.
2. `\\`: Line break/new line character.
3. `\quad`: Leaves a small empty space, necessary for model to look nice.
4. `\label` block: you can reference equations inside the report using the label you set for the equation as an argument of `\ref`. Do not forget to prepend your group no as shown in the rules above.
5. You can reference any equation you need by using its label. E.g. Equation [12](#).

References

- S. Balseiro, A. Kim, M. Mahdian, and V. Mirrokni. Budget-management strategies in repeated auctions. *Operations Research (Articles in Advance)*, pages 1–18, 2021.
- D. Charles, D. Chakrabarty, M. Chickering, N. R. Devanur, and L. Wang. Budget smoothing for internet ad auctions: A game theoretic approach. In *Proceedings of the Fourteenth ACM Conference on Electronic Commerce*, EC '13, pages 163–180, New York, NY, USA, 2013. ACM.
- R. A. Miller. Job matching and occupational choice. *The Journal of Political Economy*, 926(6): 1086–1120, 1984.

Appendix A Factory plan

You can subsection-ize appendix

A.1 Assembly lines

A.2 Storage

You can (and should) provide explanations here.



Appendix B Workflow

Appendix C Mathematical model

or even include mathematical models if you need.

$$\min \max_{h \in H} \sum_{t \in T} \sum_{j \in J} DC_{h,j}^t \quad (7)$$

$$\min \max_{h \in H} \sum_{t \in T} Y_{h,t} \quad (8)$$

$$\text{subject to: } \sum_{h \in H} X_{h,j}^t = S_j^t \quad \forall t \in T, \forall j \in J \quad (9)$$

$$I_{h,j}^t - U_{h,j}^t = X_{h,j}^t + I_{h,j}^{t-1} - W_{h,j}^t \quad \forall t \in T, \forall h \in H, \forall j \in J \quad (10)$$

$$I_{h,j}^t U_{h,j}^t = 0 \quad \forall t \in T, \forall h \in H, \forall j \in J \quad (11)$$

$$SL_{h,j}^t \in \{0, 1\} \quad \forall t \in T, \forall h \in H, \forall j \in J \quad (12)$$

Features

3.1 Mathematics

This template uses `amsmath` and `amssymb`, which are the de-facto standard for typesetting mathematics. Additionally, `esint` provides alternative integral symbols (*cf.* Table 78 in ?) and `bm` is used for bold math symbols like vectors (see (13)).

A few custom macros have also been added such as `\rbk`, `\sbk` and `\cbk` for respectively round, square and curly brackets, `\abs` for absolute value, `\norm` for norm, `\fact` for factorial and `\diff` for up-right differential.

$$\left(\frac{\pi}{2}\right), \quad \left[\frac{\pi}{2}\right], \quad \left\{\frac{\pi}{2}\right\}, \quad \left|\frac{\pi}{2}\right|, \quad \left\|\frac{\pi}{2}\right\|, \quad n! = \prod_{i=1}^n i, \quad \frac{d\mathbf{x}}{dt} = \mathbf{v}$$

Here are some examples showcasing what is possible with the default packages of `sleek`.

$$\oint_S \mathbf{E} \cdot d\mathbf{s} = \iiint_V \frac{\rho}{\varepsilon_0} dV \quad (13)$$

$$e = \sum_{n=0}^{\infty} \frac{1}{n!}$$

$$\frac{dx}{dt} = \alpha x - \beta xy \quad (14a)$$

$$\frac{dy}{dt} = \delta xy - \gamma y \quad (14b)$$

$$\ln|x| + C = \int \frac{1}{x} dx$$

$$\exp(x) = \lim_{n \rightarrow \infty} \left(1 + \frac{x}{n}\right)^n$$

$$\begin{cases} x = r \sin \theta \cos \phi \\ y = r \sin \theta \sin \phi \\ z = r \cos \theta \end{cases} \quad (15)$$

$$P(A, B) = P(A | B)P(B)$$

$$\Leftrightarrow P(A | B) = \frac{P(A, B)}{P(B)}$$

$$= P(B | A) \frac{P(A)}{P(B)}$$

If you are a L^AT_EX beginner consider the excellent [Overleaf tutorial](#). –The guy who created the sleek template, not an IE477 staff.

3.2 Units

The `siunitx` package provides three commands to typeset numbers and quantities – `\num`, `\si` and `\SI` – as well as various units (*cf.* Table 1.3).

It is possible to write, both in text or math modes, numbers without units (*e.g.* 1, 1.0, −1, 3.141 59, 10^{100} , $N_A = 6.022 \times 10^{23}$), units without quantity (*e.g.* $J = N\,m = kg\,m^2\,s^{-2}$) and, finally, quantities with their units (*e.g.* $9.81\,m\,s^{-2}$, $c = 299.6 \times 10^6\,m\,s^{-1}$).

3.3 Lists

Sleek Template uses `enumitem` to enhance the listing capabilities of L^AT_EX. There are three lists environments :

1. `itemize` for unordered lists;
2. `enumerate` for ordered lists;
3. `description` for descriptive lists.

In a list, each element is preceded by the command `\item`. It is possible to modify the labels

- individually with `\item[newLabel]`;
- for the whole environment with the `label=newLabel` option.

In the case of `enumerate`, `newLabel` can contain special expressions (*cf.* Table 1.4) that will adapt to the item number. For example, `label=(\alph*)` defines the label sequence “(a), (b), (c), ...”. Still in the case of `enumerate`, the `\setcounter` and `\addtocounter` commands allow to modify the current item number.

One could want to reduce the space between items with the `noitemsep` option or to delete the left margin with the `leftmargin=*` option.

It is also possible to write nested lists. Here follows a very condensed example.

- Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.
Arcu ac tortor dignissim convallis aenean et tortor. In eu mi bibendum neque egestas congue quisque.
+ Semper quis lectus nulla at volutpat diam ut. Felis eget velit aliquet sagittis id. Blandit aliquam etiam erat velit scelerisque in dictum non consectetur.

$$a^2 + b^2 = c^2 \tag{16}$$

- Nibh sed pulvinar proin gravida hendrerit lectus. Pretium aenean pharetra magna ac placerat vestibulum lectus mauris. Non consectetur a erat nam at lectus urna duis.
 - i. Nibh tortor id aliquet lectus. Sit amet justo donec enim diam vulputate ut pharetra sit.
 - iv. Condimentum id venenatis a condimentum vitae. Quis eleifend quam adipiscing vitae proin sagittis nisl.
 - xx. Proin sagittis nisl rhoncus mattis rhoncus urna neque viverra.

- Elit scelerisque mauris pellentesque pulvinar pellentesque habitant morbi tristique senectus.

Ridiculus mus mauris vitae ultricies leo. Mollis aliquam ut porttitor leo a diam. Velit egestas dui id ornare arcu odio ut sem nulla.

Nullam vehicula ipsum a arcu. Nibh sit amet commodo nulla facilisi nullam. At erat pellentesque adipiscing commodo elit. Libero volutpat sed cras ornare arcu dui.

3.4 Figures

Thanks to the `graphicx` package, it is possible to include external graphic documents (images, plots, etc.) in your document with the `\includegraphics` command. Most image type format (`jpg`, `png`, `bmp`, etc.) are supported by this command. However, it should be noted that it is highly preferable to use vectorial types, such as `pdf` or `eps`.



Figure 1: Random University logo.

3.5 Tables

The packages `multicol` and `multirow` comes handy for complex table formatting such as multi-column or multi-row cells.

Table 2: Example of multi-column cells.

a			qrs
b	ef	jkl	tuvx
cd	ghi	mnop	wyz

Table 3: Example of multi-row cells.

a	b	c
	de	fg
	hij	klm
nopq	rstuv	wxyz

Chapter 1

Tables

Table 1.1: Available text fonts in L^AT_EX.

<code>\emph{abcABC123}</code>	<i>abcABC123</i>
<code>\bfseries{abcABC123}</code>	abcABC123
<code>\itshape{abcABC123}</code>	<i>abcABC123</i>
<code>\lowercase{abcABC123}</code>	abcaabc123
<code>\normalfont{abcABC123}</code>	abcABC123
<code>\textbf{abcABC123}</code>	abcABC123
<code>\textit{abcABC123}</code>	<i>abcABC123</i>
<code>\textsc{abcABC123}</code>	ABCABC123
<code>\textsf{abcABC123}</code>	abcABC123
<code>\textsl{abcABC123}</code>	<i>abcABC123</i>
<code>\textsubscript{abcABC123}</code>	abcABC123
<code>abcABC123</code>	abcABC123
<code>\texttt{abcABC123}</code>	abcABC123
<code>\underline{abcABC123}</code>	<u>abcABC123</u>
<code>\uppercase{abcABC123}</code>	ABCABC123

Table 1.2: Available math fonts in L^AT_EX and AMS.

<code>\$\mathcal{abcABC123}\$</code>	$\neg \sqcup \mathcal{ABC} \infty \in \ni$
<code>\$\mathit{abcABC123}\$</code>	<i>abcABC123</i>
<code>\$\mathnormal{abcABC123}\$</code>	<i>abcABC123</i>
<code>\$\mathrm{abcABC123}\$</code>	abcABC123
<code>\$\mathbb{abcABC123}\$</code>	$\ni \mathbb{ABC} \nexists \nexists$
<code>\$\mathfrak{abcABC123}\$</code>	$\mathfrak{abcABC123}$

Table 1.3: Available units in the `siunitx` package.

metre	m	second	s	mole	mol
meter	m	ampere	A	candela	cd
kilogram	kg	kelvin	K		
hertz	Hz	farad	F	lumen	lm
newton	N	ohm	Ω	lux	lx
pascal	Pa	siemens	S	becquerel	Bq
joule	J	weber	Wb	gray	Gy
watt	W	tesla	T	sievert	Sv
coulomb	C	henry	H		
volt	V	celsius	$^{\circ}\text{C}$		
angstrom	$\text{\AA}$	day	d	liter	L
arcminute	'	degree	$^{\circ}$	litre	l
arcsecond	"	electronvolt	eV	minute	min
barn	b	gram	g	neper	Np
bar	bar	hectare	ha	tonne	t
bel	B	hour	h		
yocto	y	milli	m	mega	M
zepto	z	centi	c	giga	G
atto	a	deci	d	tera	T
femto	f	deca	da	peta	P
pico	p	deka	da	exa	E
nano	n	hecto	h	zetta	Z
micro	μ	kilo	k	yotta	Y

Table 1.4: Special expressions for the label of `enumerate` environments.

Expression	Description
<code>\arabic*</code>	Arabic numbers (1, 2, 3, ...)
<code>\alph*</code>	Lowercase letters (a, b, c, ...)
<code>\Alph*</code>	Uppercase letters (A, B, C, ...)
<code>\roman*</code>	Lowercase Roman numerals (i, ii, iii, ...)
<code>\Roman*</code>	Lowercase Roman numerals (I, II, III, ...)