



BURSA TECHNICAL UNIVERSITY

Department of Mechanical Engineering
Computational Fluid Dynamics
(MECHT0505)

Report of Assignment 2

Flow over a 2D Car Model Using Open Source Software

By

Name	Student ID
Name Surname	1234567890
Name Surname	1234567890
Name Surname	1234567890

Course given by

Asst. Prof. Levent Aydinbakar
soscfd.com

February 30, 2099

1 Introduction

Briefly introduce the importance of CFD for automotive industry. Explain what `snappyHexMesh` is. Explain why do we make a mesh refinement study in CFD.

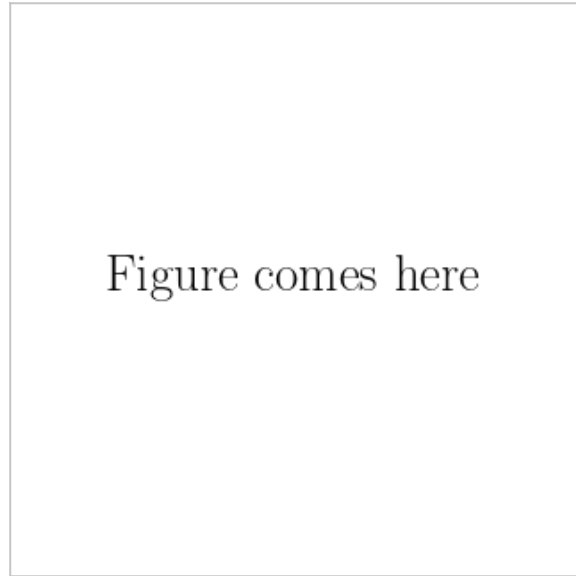


Figure 1: The computational domain of the 2D car problem

2 Methodology

Describe the computational approach used to solve the problem, including mesh generation and boundary conditions.



Figure 2: The computational mesh for the 2D car problem. Coarse mesh (*top*) and refined mesh (*bottom*)

Discuss the simulation parameters, including the `blockMesh` and `snappyHexMesh` settings you changed to obtain a refined mesh.

Search about **Courant-Friedrich-Lewy (CFL) number** and write here the values we used in the lecture and you used in your computations.

3 Results

Present and discuss the results.



Figure comes here



Figure comes here

Figure 3: Streamtraces and velocity distribution around the car at $t = 2500$ s with the refined mesh (*top*) and coarse mesh (*bottom*)

Summarize the findings, emphasizing the observation of the effects of mesh refinement on your results.

4 Contribution

Detail the contributions of each group member.

Team member	Contribution
Name Surname	Worked on mesh generation.
Name Surname	Conducted simulations.
Name Surname	Analyzed results.

Table 1: Contributions of group members