Design Of Machine Elements Lab 1

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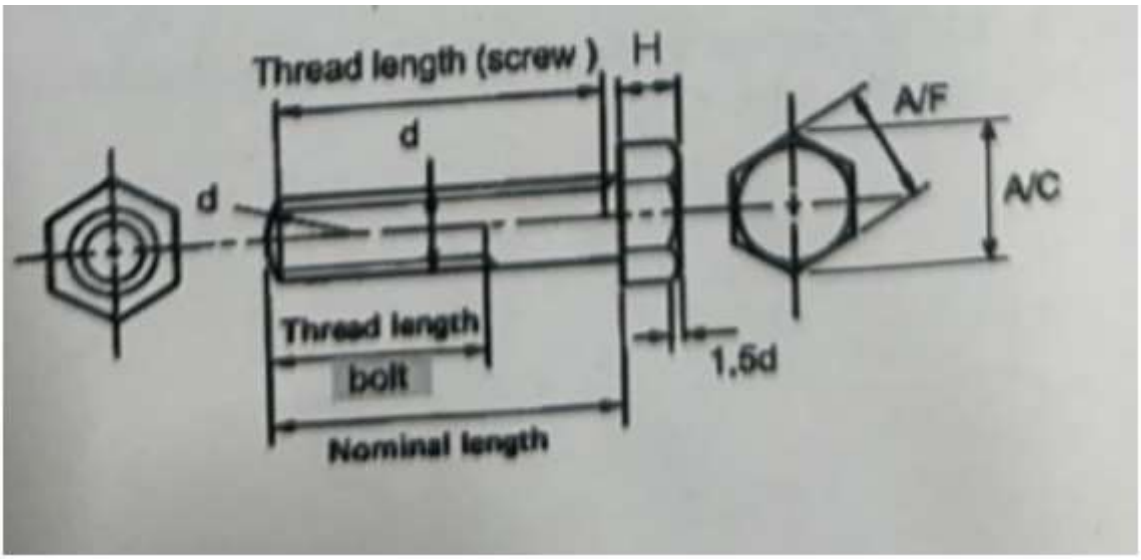
1. Selection of Nut and Bolt as per Standards

- A bolt with an approximate diameter of 11.15 mm is needed for the design. To meet standard specifications, a 12 mm diameter bolt has been selected.
- The nut's dimensions are chosen according to the same standards to ensure proper compatibility.
- The selected bolt has a height of 30 mm and a pitch of 1 mm per revolution.
- The following standard chart provides reference details for selecting a 12 mm diameter bolt.



10		1.5	1.25 or 1	7.18	17	19.6
12		1.75	1, 1.5 or 1.25	8.18	19	22.1

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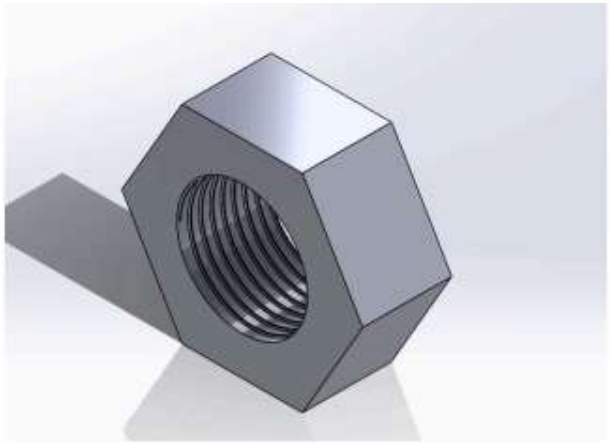
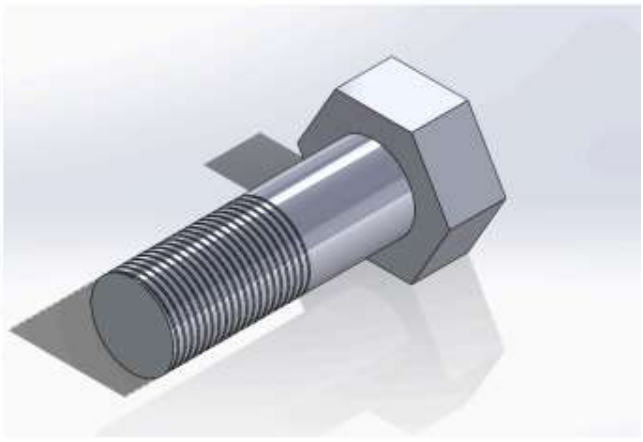
2. CAD Modeling Using SolidWorks

Bolt and Nut Creation

- Using SolidWorks, the bolt and nut were designed based on the selected specifications.

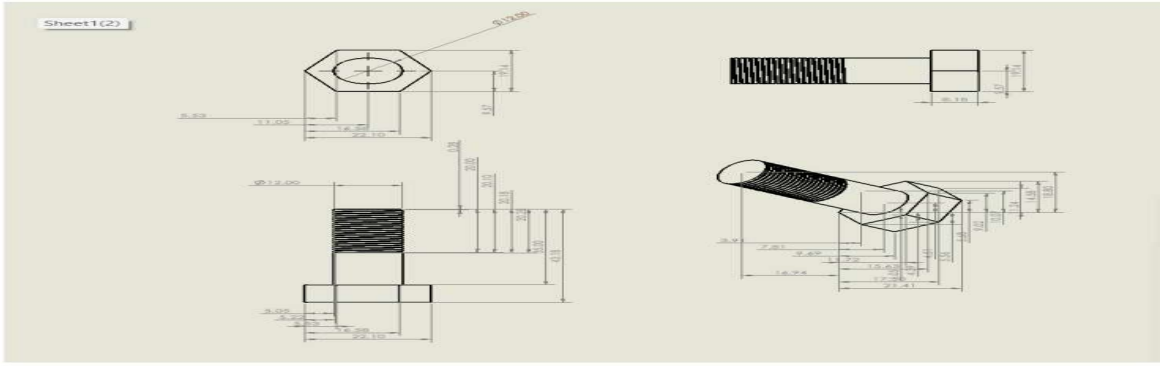
- The individual components were modeled with appropriate constraints to meet standard tolerances.





Individual Drawings

- Detailed technical drawings were created, including front, top, side, and isometric views for clarity.



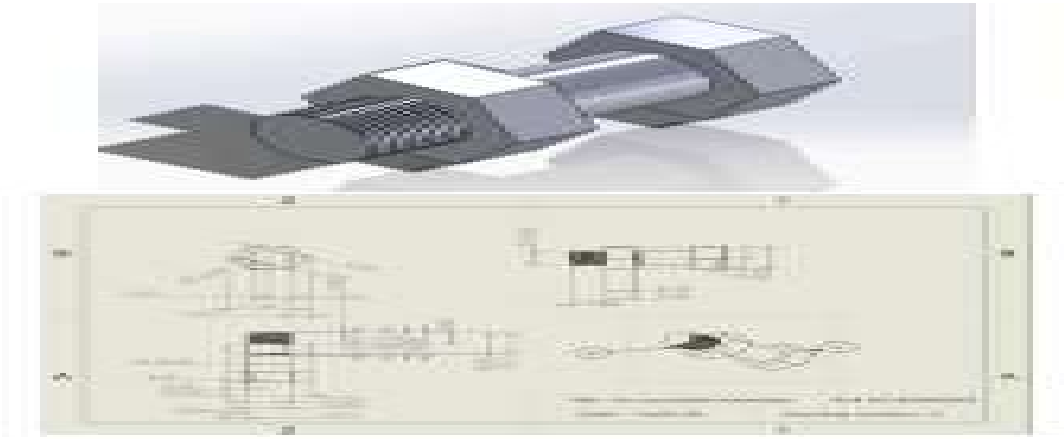
Bill of Materials (BOM)

- A structured BOM was prepared to list all required components along with their specifications.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	bolt	Steel	1
2	Nut	Low carbon steel	1

Assembly and Drawing

- The nut and bolt were assembled in SolidWorks to ensure proper fit and alignment.
- An assembly drawing was generated to visualize the final model.



Conclusion

- A standard M12 bolt and nut were selected following engineering design guidelines.
- The components were successfully modeled, assembled, and documented in SolidWorks.
- The final design aligns with industry standards and is ready for manufacturing or simulation applications.