Lab # 05

Electrical Transient Analyzer Program (ETAP)

In this lab we will learn the basics of ETAP.

Introduction:

ETAP stands for Electrical Transient Analyzer Program. It is one of the advanced software used for power system planning, designing and operation. It is very user friendly and requires very less simulation time. It provides data exchange interfaces including MS Word, MS Excel and PDF etc.

Important Features of ETAP

Single line diagram can created very easily. Infinite number of buses can be added in single line diagram of the Grid structure. It has the capability to perform various types of analysis given below.

- Load flow studies
- Short circuit Analysis
- Harmonic Analysis
- Optimal power flow analysis
- Reliability Assessment
- Star analysis of protection devices
- Transformer sizing and MVA capacity

Load Flow Analysis

Load flow study is a numerical analysis of the flow of electric power in an interconnected system. For notation of load flow, single line diagrams are usually used with per unit system. It focuses on the various aspects of the AC parameters such as voltages, voltage angles, real power and reactive power. It analyzes the power system in normal steady-state operation. Power flow study is very important for future expansions of power system. Gauss-Seidel and Newton-Raphson are the various techniques used for load flow studies.
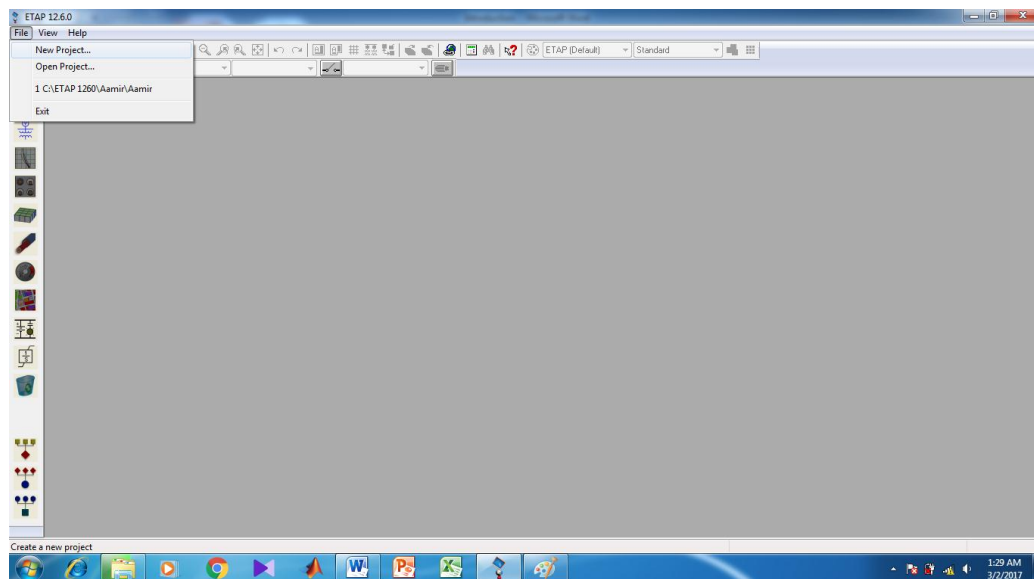
How to Start ETAP

- First install ETAP in your system.

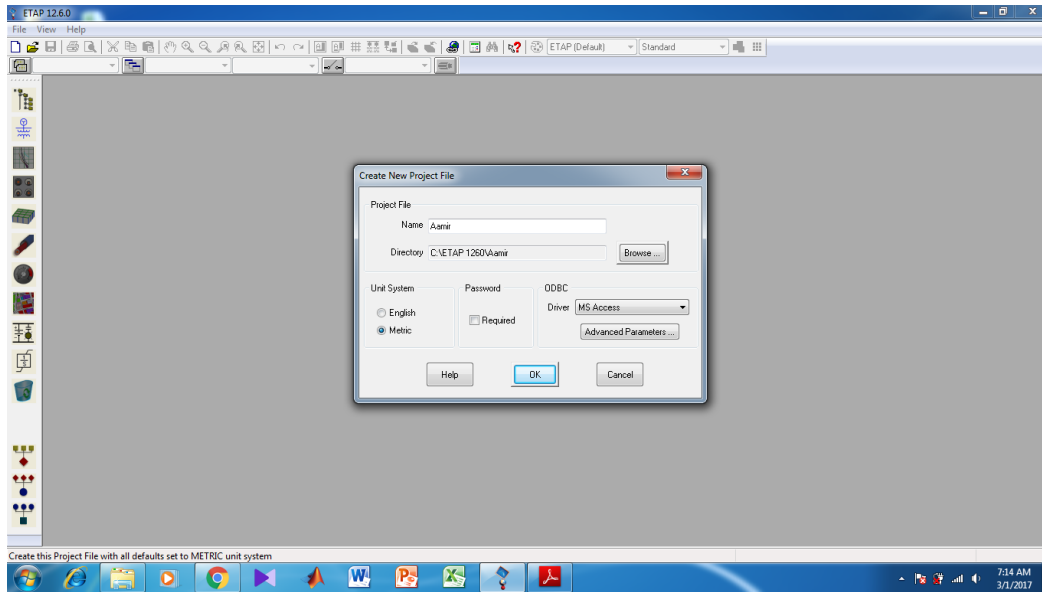- Click on ETAP shortcut icon available on desktop after installation.
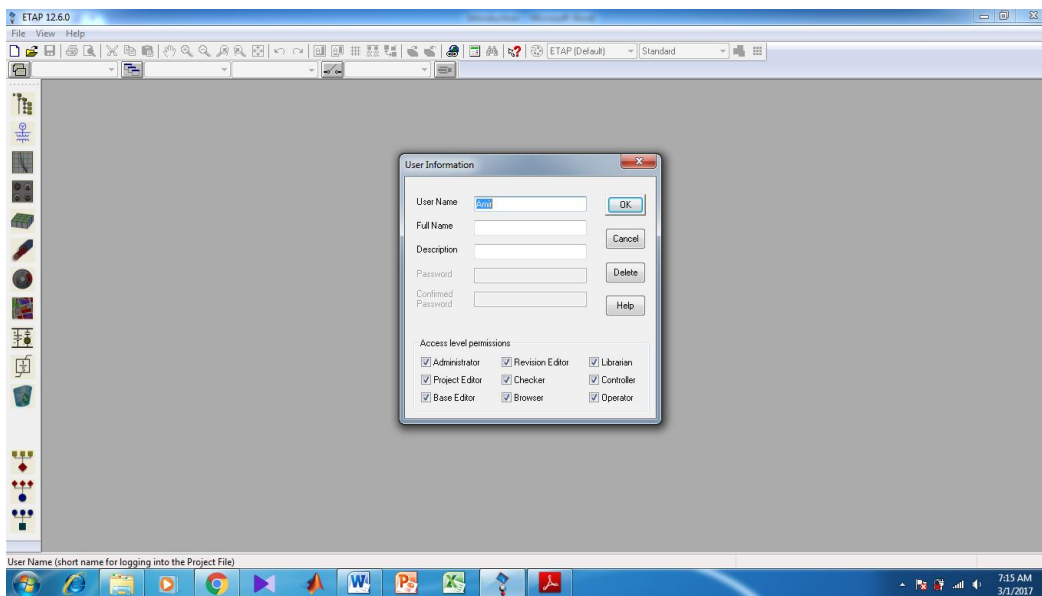

ETAP 12.6.0

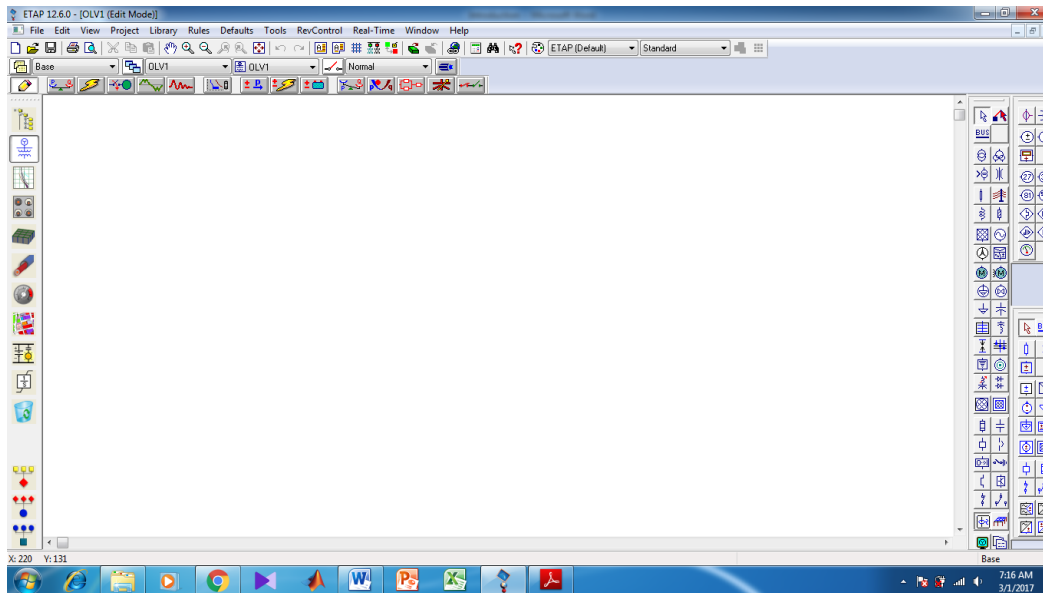**Main Window of ETAP**
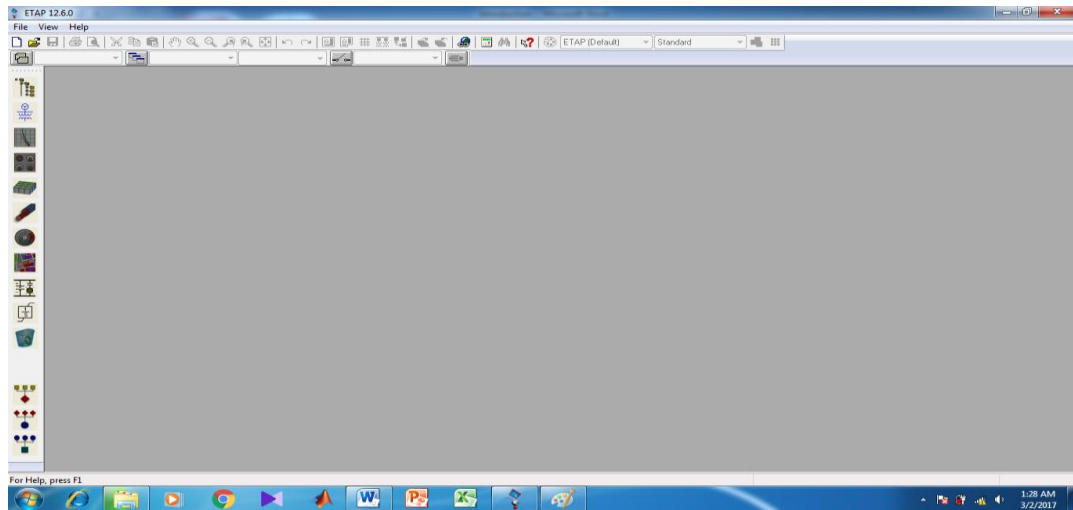
How to Open New Project

- Enter Project File Name and Unit System

- Enter Full Name and Description
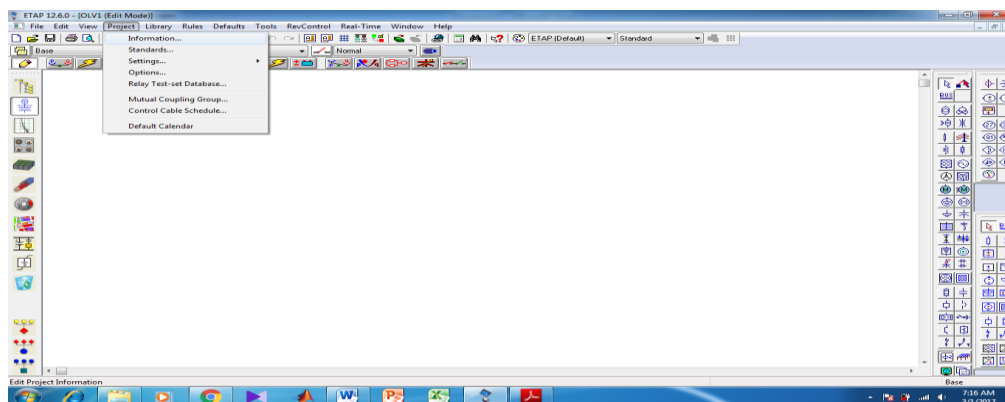
Main Window for Project
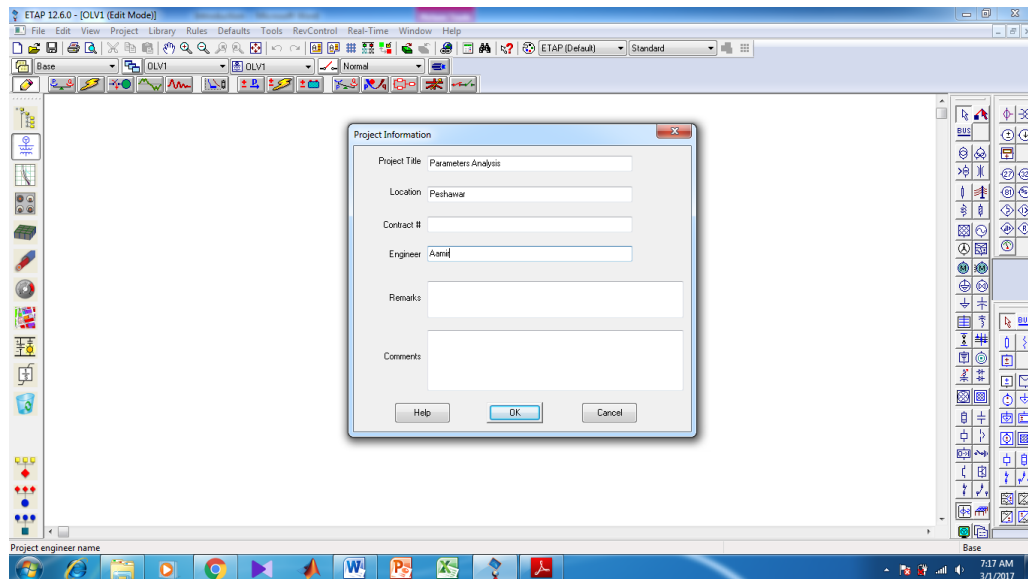

Different Toolbars

On the main page we have different toolbars such as

- Project toolbar

- System toolbar
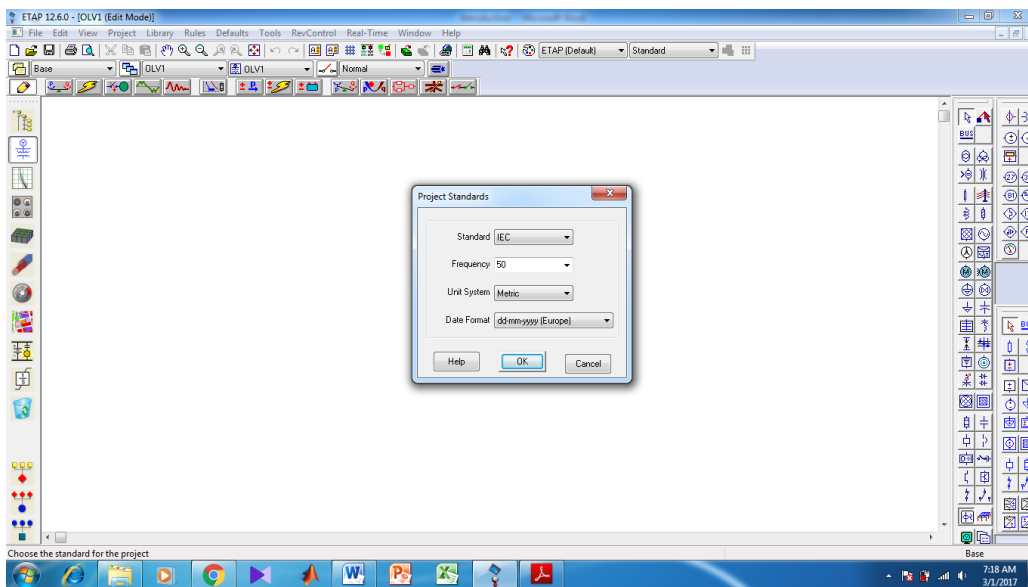
- Mode toolbar

- Presentation toolbar

- Real toolbar

Project Information and Standards

Project Information

Project Standards

To Start Project

Basics are provided initially such as project name, location, type of project, purpose of project, unit system and the concern project. On the right hand side of the main window a toolbar is available which consists of almost every single component used in the power system such as transformers, motors, breakers, fuses, transmission lines, wind turbine generators, synchronous generators and many others.

Lab Task:

1. Explain any two features of ETAP.

2. Explain some of the toolbars used in ETAP.

Marks Obtained: ……………………….   **Remarks:** …………………….