



ADVANCE SOFTWARE ENGINEERING (CSSE-414)

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4th Semester

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THE BURGER HUB

LAB 02

Analysis tools,
Design tools,
Project Management tools,
Database Management tools,
And
Documentation tools

1. Database Management Tools

Description:

“A Software that handles the storage, retrieval, and updating of data in a computer system”

- Google Dictionary

A database management system (DBMS) is system software for creating and managing databases. The DBMS provides users and programmers with a systematic way to create, retrieve, update and delete data.

Some Database Management systems popular In Market:

1. Oracle RDBMS:

Oracle database is the most widely used Relational database management software.

It's a commercial tool.

It supports multiple Windows, UNIX, and Linux versions.

(NOTE: We have used oracle in our project)



URL: <http://www.oracle.com>

2. Microsoft SQL Server:



Developed in the year 1989 by Microsoft It is also the one of the widely used database management system.

It's a commercial tool and the language used is Assembly C, Linux, C++ for writing it.

Works on Linux and windows operating system.

URL: <https://www.microsoft.com/en-in/sql-server/>

3. MySQL:



Latest version is 8 and Language used is C and C++.
High Speed of processing data, use of triggers increases productivity, with rollback and commit helps in data recovery if required.

Works on Linux, Windows.

It's a commercial tool and free for personal use.

URL: <https://www.mysql.com/>

4. IBM DB2:

URL: www.ibm.com/analytics/us/en/technology/db2/

5. Microsoft Access:

URL: <https://products.office.com/en-us/access>

These were some popular examples in the market there are many more existed in the market and the list goes on.

2. Designing Tools:

Description:

Software design is a process to transform user requirements into some suitable form (i.e. diagrams), the requirements can be changed into any other desired form enabling the coding and implementation of the software by the programmers.

Software Requirement specification document is used for assessing the requirements. But requirements need to be keen, specific and should be more particular for carrying out coding and implementation. The attention is being shifted from the area of problem to the area of solution by Software design.

Software design phase includes the following things:

- Designing of a database.
- Unified modeling diagrams; to make it easier for the programmer to understand the flow of the system and how different parts of the software interact with each other etc.
- Selection of a programming language and a coding software.

Some Examples:

There are various tools available on the internet to design a software, some are web applications and some are desktop applications, below are the few examples of tools used to design a software:

1. Lucidchart:

Lucidchart is a web-based commercial service which allows users to create flowcharts, organizational charts, UML designs and many other diagram types.

URL: <https://www.lucidchart.com>

2. Visual Paradigm:

Visual paradigm is a tool which supports system modeling (uml diagrams, entity relationship diagram etc), Enterprise architecture, user experience design etc.

URL: <https://www.visual-paradigm.com>

3. UMLet:

UMLet is an open-source Java-based UML tool designed for teaching the Unified Modeling Language and for quickly creating UML diagrams.

URL: <https://www.umlet.com>

4. Microsoft Visual Studio:

Microsoft Visual Studio is an integrated development environment from Microsoft. It is used to develop computer programs, as well as websites, web apps, web services and mobile apps

URL: <https://visualstudio.microsoft.com>

5. MS Visio:

Microsoft Visio is a diagramming and vector graphics application and is part of the Microsoft Office family. The product was first introduced in 1992, made by the Shapeware Corporation. It was acquired by Microsoft in 2000.

URL: <https://products.office.com/en/visio/>

And so on ...

What is documentation?

Documentation is written text or illustration that describes the product to its users. It either explains how it operates or how to use it, or may mean different things to people in different roles.

There are different formats and editors (tools) that can be used to write a well-structured documentation. Some of them are as follows:

1. Requirement Documentation Tools

Requirement documentation tools are very beneficial in order to clearly define complete requirements from all aspects. These tools also helps in easily managing changing requirements. If we won't use these tools the uncontrolled changes and unchanging documentation may lead to confusion, missed schedules, cost overruns, and unsatisfied users and developers.

Some examples of requirement documentation tools are:

Process Street



This is one of the most user-friendly Requirements Management tool to manage processes, team workflow, checklists and operating procedures. It's easy and time-saving to interact with a client via this tool. By using Process Street one can design one's own processes, without being experts in it.

Link: <https://www.process.st/>

Visual Trace Spec



Visual Trace Spec is a user-friendly tool for requirements specification and traceability. This fully customizable software includes a word like interface for documents generation.

Visual Trace Spec is equally effective for developing software, systems, embedded systems, medical devices, apps, and more.

Link: <http://visualtracespec.com/>

2. Design Documentation Tool

Software design or Software architecture design documentation tools lay down the key concepts and principles on which the architecture is designed and describe the logic used to build the software. Without proper architecture documentation, a project may run into a dead end.

Some examples of design documentation tools are:

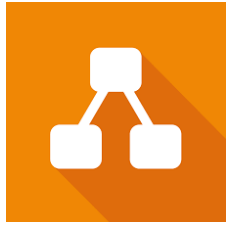
GenMyModel



GenMyModel can be utilized to create Unified Language Modeling (UML) diagrams and flowcharts for their further use in software architecture design and team collaboration environments.

Link: <https://www.genmymodel.com/>

Draw.io



A free online diagram software for making flow charts, process diagrams, org charts, UML, ER and network diagrams. This app allows you to easily save your diagrams into Google Drive, Dropbox, One Drive, and others.

Link: <https://www.draw.io/>

3. Project Documentation Tool

Some of the project documentation tools are:

Project management software has the capacity to help plan, organize, and manage resource tools and develop resource estimates. Depending on the sophistication of the software, it can manage estimation and planning, scheduling, cost control and budget management, resource allocation, collaboration software, communication, decision-making, quality management and documentation or administration systems.

MS Project



MS Project is a very useful tools for project scheduling, resource estimation, defining work breakdown structure, generating network diagrams and determining critical path, working on Gantt and pert charts, tracking project progress etc.

Link: <https://www.microsoftproject-online.com/>

4. Database Documentation Tool

Database documentation tools are used for mapping different databases and their schemas. It helps us in having a clear picture of tables, columns, views, relations between entities etc.

Some of the database documentation tools are:

Dataedo



Dataedo is an excellent tool to document your SQL Server, Oracle, and MySQL databases. It can describe each table and column (data dictionary), procedure and function, build ER diagrams from existing schema and generate HTML, PDF or Excel documents.

Link: <https://dataedo.com/>

Adminer



Adminer is a database management tool that allows you to manage databases, tables, columns, relations, indexes, users, permissions, and more from a web-based user interface. It is packaged as a single PHP file (similar to phpMyAdmin) and has support for popular database management systems like MySQL, PostgreSQL, SQLite, MS SQL, Oracle and Mongo DB. Different UI designs are available for you to download as CSS files.

Link: <https://www.adminer.org/>

5. End-User Documentation Tool

End-User documentation tools are very helpful in writing a user guide, a training manual, or any other type of help files. These tools includes all functionalities that are required in producing a complete user manual.

Some of the End-User Documentation tools are:

StepShot Manuals



StepShot Manuals offers the best solution for large enterprises to generate user manuals and online guides just in a few clicks. With StepShot, you may bid farewell to the traditional way of documenting things and get the work done in a timely manner without switching between multiple applications.

Link: <https://stepshot.net/manuals/>

Oracle UPK



Oracle UPK is a unique platform to generate, deploy, control and maintain software training content to ensure better end user adoption. Oracle UPK delivers context-sensitive help directly within the application to walk the user through a business process reducing help desk calls.

Link:

<https://www.oracle.com/technetwork/middleware/upk/overview/index.html>

Analysis Tools:

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes. The data collection component of research is common to all fields of study including physical and social sciences, humanities, business, etc. While methods vary by discipline, the emphasis on ensuring accurate and honest collection remains the same.

Use the following tools to collect or analyze data:

Box and Whisker Plot: A tool used to display and analyze multiple sets of variation data on a single graph.

Check sheet: A generic tool that can be adapted for a wide variety of purposes, the check sheet is a structured, prepared form for collecting and analyzing data.

Control chart: A graph used to study how a process changes over time. Comparing current data to historical control limits leads to conclusions about whether the process variation is consistent (in control) or is unpredictable (out of control, affected by special causes of variation).

Design of experiments: A method for carrying out carefully planned experiments on a process. Usually, design of experiments involves a series of experiments that start by looking broadly at a great many variables and then focus on the few critical ones.

Histogram: The most commonly used graph for showing frequency distributions, or how often each different value in a set of data occurs.

Scatter diagram: A diagram that graphs pairs of numerical data, one variable on each axis, to look for a relationship.

Stratification: A technique that separates data gathered from a variety of sources so that patterns can be seen.

Survey: Data collected from targeted groups of people about their opinions, behavior or knowledge.

Tools Required For Analysis:

MS Excel:

- Box-Whisker Plot.
- Check sheet
- Control Chart

These were some Functions that were provided by excel to have Analysis about your project by the help of Different diagrams.

Link: <https://office.live.com/start/Excel.aspx>

Fish Bone Diagram:

A fishbone diagram, also called a cause and effect diagram or Ishikawa diagram, is a visualization tool for categorizing the potential causes of a problem in order to identify its root causes.

Link: www.lucidchart.com/

Flow chart Diagram:

A flowchart is a visual representation of the sequence of steps and decisions needed to perform a process. Each step in the sequence is noted within a diagram shape. Steps are linked by connecting lines and directional arrows.

Link: www.lucidchart.com

PROJECT MANAGEMENT TOOLS

Project management tool that can help you manage your projects Project management tools are often heavily integrated with resource scheduling and time tracking so that they can help you effectively manage the people on the project team and their project workload.

Following are the best project management tools & software.

1. MS Project

Microsoft Project helps you execute projects with ease. Built-in templates and familiar scheduling tools help project managers and teams stay productive.

1. PROOFHUB

ProofHub is a versatile project management system used by leading organizations like NASA and many more. This all-in-one tool comes packed with powerful features to eliminate the need of having too many different tools to run your business.

2. Scoro Projects

Scoro is known as one of the most comprehensive business management software's for professional and creative services. For those who wish to bring structure to your work, Scoro is the right pm tool for you.

3. Workzone Projects

Workzone is built by a highly dedicated team to help individuals and organizations gain better control and visibility in work management. It gives them a central place to manage and share work, so everyone stays on the same page.

4. Zoho Projects

Without a doubt, Zoho Projects stands out as one of the best simple project management tool that can help you streamline your upcoming work and tasks with a click.

5. GanttPRO

GanttPRO is one of the best pm software, appreciated already by 250k project managers around the globe. It helps build project plans and timelines, track workflow, control expenses, follow deadlines, and arrange productive collaboration in a single place. The solution offers ready-made templates for an easy start.

6. Functionfox

Functionfox is a timesheet and project management tool trusted by creative professionals all around the world. It is both powerful and easy-to-use. You can accurately from conceptualization to completion, reduce admin time and profits.

7. Workbook Project

Workbook is a grown-up software suite for project and CRM, collaboration, file-sharing, forecasting, and accounting. You can choose exactly as per your requirements. Create projects and tasks easill.Easily customizable.Supports a client portal.

8. Easy Project

Easy Project is a professional project management tool for you, your team, and the whole company. Trusted by top-notch companies like Toyota, Lenovo, Bosch, it is a perfect fit for nonVisual project maps and plans, Compatible with modules for Resources, Finances, Help Desk and CRM, Integrated with Outlook, Project, Excel be it IT or educational.

9. Teamdeck

Teamdeck offers a complete solution for companies to deliver projects faster. It is an essential pm tool for managing resources and monitoring time spent on tasks and projects. With Teamdeck you can book your employees on different projects and create accurate timesheets with one-click time tracking.

10. Freedcamp

This is an extremely simple and intuitive project management tool for large organizations including architecture, interior design, IT services, retail, telecommunication and many more. Freedcamp offer functionality to unlimited users making organizing details and tasks quick and super easy.