TASK#1

1- analysis :
This phase's goal is to provide a more thorough definition of the system's inputs, outputs, processes, and interfaces. The system's procedures will be specified at the functional level at the end of this phase, which means that while the functions that need to be carried out will be known, the methods by which they will be carried out may not be.
inputs : collect the client requirements and demnads for the project
outputs: backlog sheet created for the team filled with the tasks and iterations and timings .

2-design :
During the first coding phase, developers use this phase as a guidance. The primary goal is to produce a comprehensive design that describes the system's functionality, user interfaces, and database structure.
inputs : user customization need for the web , colors and paints
outputs :designed web template as a prototype which will be reviewed to the developer UI/UX

3-developer:
a web developers is the one who codes , for instance , the developer recieves the ui/ux template from the designer and code throught (the front end develper)
front end developer is also resposible for the front page the the customer or the user see .
back end : the developer behind the work used

inputs : api designs by the backend developer
outputs:api integrations linked to the client side rendering

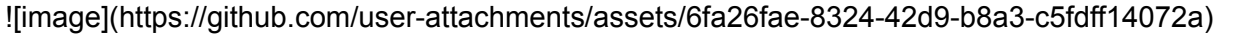
input of the front end : api codes recieved by the back-end
output : integrate the api data

4-testing :
As soon as programming is complete, testing begins. Any flaws in the program are repaired after a comprehensive evaluation. This stage guarantees that the program satisfies client needs.
inputs : reporting bugs and report the test for the results
check the web perfomance if it passes or fails
outputs : report the test results for the team to check for errors
rearrange the prioroites of each error

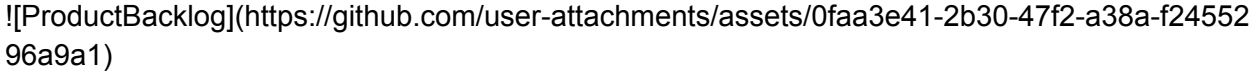
5-deployement:
is the crucial step in releasing developed software to its target audience. As the software enters a live environment, it marks the completion of development and testing activities.
inputs : check for security and develop the web
outputs :verification and debug errors

6-maintainance :
is the final part of the project that manages updates and fixes, guarantees ongoing software operation, and keeps the program current and working.
inputs : feedbacks from the user and apply changes in the project if needed
cpu and memory usage
outputs :
reslove the issues from the user
update the softtware changes if needed

----roles---
(analysis)



-product owner:
the one that masters the customer needs for the product demand required (csutomization , priorities .. etc..)



-project manager:
accountable for overseeing the budget, timeline, and resources in addition to establishing the project's goals, deliverables, and scope.

-business analyst :
Working together with stakeholders, we may collect and evaluate requirements, facilitate system design, establish user acceptance criteria, and make sure the software is designed to meet user wants and corporate objectives.

-CTO:
Each company has a different CTO role. Software development businesses select the CTO type that best suits their goals and business needs from a variety of options. Technical leadership and operational management are the two main categories of CTOs.who's mostly aware of the most sdlc phases technically and practically (fully experienced in web development)
(design)

-system architect:
safe system architecture. creates the software's user interface (UI) and user experience (UX), making sure it is both aesthetically pleasing and intuitive according to the user stories

-UI/UX designer :
are found in software product development, design, and marketing. This individual is continuously engaged in the development of digital products and seeks for ways to improve their usability.
for example : Users of a video streaming service may prefer to search for characters over video titles, according to individual testing. Therefore, incorporating a feature that displays character images while users type in a search bar ought to boost user engagement.
(development):

-front end developer :
Converting UI design to code, implementing interactive elements, optimizing performance
tools: HTML, CSS, JavaScript, libraries, and frameworks (technologies)

-back end developer :
Developing server logic, managing databases, creating APIs(vs+ssms), handling security, scalability, and performance
tools :c sharp +.net framework
database: SQL server (data tier)
(testing)

-solution architect:
guarantee that the solutions are dependable, effective, and smoothly itegrated into the larger IT system by supporting and managing the adoption of automated testing procedures. This promotes innovation and strategic expansion in addition to business stability.
tools : Figma , github for deployments

-QA engineer :
in charge of creating and putting into practice testing procedures, techniques, and instruments to find and fix any problems or flaws in software programs.
tools :for api testing "post man "

-tester:
Focuses on finding and reporting bugs , Test execution—manual or automated and Find bugs before the product is released
tools : unit test"x unit " and api testing "post man"

-Devops:
A DevOps process needs to use the right tools to address the key phases of the DevOps lifecycle:

Discover
Plan
Build-- DOCKER - Github - Jira
Test

Monitor
Operate
Continuous feedback
(deployment):

-data administrator :
is the person or people in charge of overseeing, managing, organizing, and running a database management system. One of the main responsibilities is to manage, secure, and maintain the database systems. They are in charge of approving database access, organizing, capacity, planning, installing, and keeping an eye on usage, as well as obtaining and assembling hardware and software resources as required. They also play a variety of roles in data recovery, backup, security, migration, database architecture, and setup. For any business or organization that depends on one or more databases, database administration is a crucial and important task. They are in charge of the database system as a whole.

tools : SQL server (for c#) + microsoft visio
ssms(sql server management studio) --- ORM (entity framework)

-devops :
manage the cloud and the system , moreover , troubleshooting.
tools : gitlab , github and bitbucket

(maintenance):
users :
feedbacks for the technical team according to the performance and requests
testers:
fix bugs and running the tests and most importants is witnessing the security testing

-support managers :
additional testing after deployment and installing upgrades . meeting with the insurance company
lead the team members and add tasks if needed .
tracking the software updates and changes

-- agile methodology of working and its purposes --
The Agile methodology is a project management technique that prioritizes adaptability and team work. Big businesses like Facebook, Google, Amazon, and others adopt this most recent approach.
agile methodologies are well known for breaking a project up into manageable parts and adjusting to changing needs.
Their key concerns are client satisfaction, teamwork, and flexibility.

Large companies like Facebook, Google, and Amazon have embraced agile due to its adaptability and customer-focused approach.

2--AGILE VS WATEWRFALL--
ADVANTAGES OF AGILE :
1- flexibility : allows the team to respond to changes in requirements, client feedback & market trends quickly.
2-adaptability : assures that the final product meets the customer's expectations & satisfies their needs.
3- continuous delivery :continuous delivery of operating software solutions. This process confirms that the development team can provide high-quality software solutions to customers quickly.

DISADVANTAGES OF AGILE :
1- Lack of Predictability : The team can find it difficult to estimate how long a work would take, and the finished result might not meet the original specifications. Customers and stakeholders that anticipate a predictable timeframe for the software solution's delivery may become frustrated by the lack of predictability.
2-Limited Scope:In terms of the software solution's scope, this method may be restrictive. Within the allotted period, the development team can find it difficult to provide a complete solution that satisfies every need of the client.

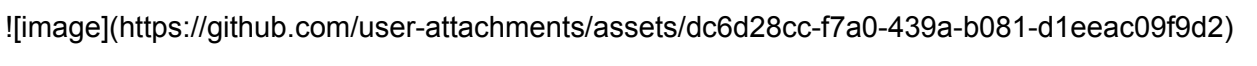
ADVANTAGES OF WATERFALL :
1-less coordination is needed because the stages and sequential operations are clearly defined.
2-A well-defined project phase aids in defining work dependencies.
3-Once the requirements are established, the project's cost can be estimated.
Increased emphasis on requirements and design documentation
enables big or evolving teams to collaborate toward a shared objective established during the requirements phase.

DISADVANTAGES OF WATERFALL:
1-Making adjustments is not supported by the waterfall model.
2-It can render your earlier work inadmissible.
3-Clients and end users are not included in this approach.
4-Testing is postponed until the project is finished.
5-Longer delivery times may be encouraged by the waterfall methodology.
agile is used in dynamic environment where waterfall is used in lower risks projects and doesn't require speed
3-- state all framneworks --

agile framework:

kanban and scrum
--SCRUM

--KANBAN



--## state all web applications in web development and services --
cliend side rendering

-blazor :
Ban open-source web framework that enables programmers to use C# and.NET to create interactive client-side web applications. To put it briefly, client-side Blazor uses WebAssembly to bring C# to the browser.
Enables progressive web app development.
Create reusable C# components.
Server-side debugging is fully enabled.
Server-side rendering for faster WebSocket connections.

-angular:
used in JavaScript. But with the development of the technology, TypeScript has replaced JavaScript in Angular.

-next.js: Server-side rendering and static rendering are two more functionalities made possible by the React framework Next.js.
server side rendering:
MVC/BLAZOR:

represents the date applications in the presentation tier
((*backend*))(logic tier) : .net/.net core framework

Server & Backend Language – Node.js, Python (Django, Flask), PHP, Java (Spring Boot), C# (.NET

2- programming language c#
data tier // (database):
SQL server(c#) to ORM (entity framework)

-- web stacks --
LARREL : MYSQL . PHP
JAVA: ORACLE . JAVE SPRING
.NET:DQLSERVEER C#.NET
PYHTON : SQLHTE , PYHTON DIANGO

3-- TOOLS FOR DEPLOYEMENT --
DOCKER
AZURE -- DEPOLYEMENT
C#
.NET
DATABASAE SERVER -SQLSERVER

4-- scrum framework for agile : timings , meetings, roles --
timimgs : the agile largely depend in the timings for every iterations theres a limited timings
meetings : standup meetings (daily) , sprint planning , sprint review and sprint retrospective
roles

-- explain in detail the git version control system explaining why and when we use it and all the related terms --
used to monitor file modifications for example merging and manage the efforts of several developers. It enables developers to effectively organize their source code, monitor modifications, work together, and roll back to earlier iterations when needed.branching -merging and most importantly handling conflicts .
usage:
1- branching // having a testing code for addition and trying new features so that the main code wont get affected
2- merging // after positive and affective adddition to the code , the main line will merge the feartures added to the code or the project
3- handling conflicts
when to use it?
- when handeling conflicts , a need to add new lines for tghe projects and pushing files to the hub by the cmd and for the team projects .

-- mention all the cloud repositories that uses git version control and compare between them --

1- github : open source projects

2- git lab : self hosted

3-azure devops:microsoft for enterprising

4-google cloud: enterprises

5-bitbucket : private repostories

-- state all the commands that you know with the explaining of each function of them --
git status (check if the user updated the file before adding)
git add . (adding the file to the system after updating)
git commit -m"" (for adding commit to the file)
git log --oneline (show the changes to the unstaged file)
git push (pushing the file to the repo)
git pull (pulling the file if the changed had been made in the repo ((adding commit))--for exmaple
git config user.name global
git config user.email global
after installing the git so the cloud get known by the system and in the folders