UGANDA CHRISTIAN UNIVERSITY

A Centre of Excellence in the Heart of Africa

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REGISTRATION NUMBER: S19B23/119

COURSE: BSCS THREE

COURSE UNIT: SOFTWARE PROJECT MANAGEMENT

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Question One

I. Define a statement of work and outline the work products of your course project.

A statement of work is a document that provides a description of a given project's requirements.

It defines the scope of work being provided, project deliverables, timelines, work location, and payment terms and conditions.

Elements of A statement of work include:

- Purpose of the project
- Scope of work being performed
- Location of the project, project length, and any work requirements
- Expected deadlines and deliverables
- Acceptance criteria
- Any hardware and software required
- Performance-based standards to be met

The work products of your course project

A work product is an output of a project and it includes both tangible elements such as infrastructure installations and intangible elements such as presentations

- Requirements both functional and non-functional
- Market Research
- Design
- Flowcharts
- Erd model design
- technical plan
- testing
- Data
- Methodology
- Source Code

II. Elaborate 5 potential risks likely to threaten your project and how to they can be mitigated.

Time risk is the risk that tasks in a project will take longer than expected. Delayed timelines might impact other things like budget, delivery date, or overall performance. it's easy to underestimate the time it'll take team members to complete a project during the initial planning phase.

To mitigate time risk, one way is to overestimate the time needed to complete tasks in the planning phase and build in time contingency. Also creating a project schedule using a Timeline or Gantt chart.

Operational risk involves changes in company or team processes, like an unexpected shift in team roles, changes in management, or new processes that your team must adjust to. These things can create distractions, require adjustments in workflows, and may impact project timelines.

How to mitigate operational risks: You can't predict or prevent all operational risks, but if you know a team shift or process change is coming, you can mitigate the effects of the transition. Make sure

your team is prepared for the change and has time to adjust through team meetings, scheduling tools, or additional trainings.

Technology risk

The technological aspect of running a project is a complex deliverable because there is a high turnover of new and advanced technologies. The tech aspect of a project poses a critical threat to data security, organization services, compliance and information security.

This is mitigated by always making full research on the available technologies that are being used in the given system

Communication risk

With all the communication channels and gadgets at our disposal, sometimes team members neglect the critical components of effective communication, leading to loss of data or misinformation and eventual project disruption.

Mitigation

Effective and timely communication is a significant work ethic that you must strictly observe when you are in charge of a project. Setting up meetings with stakeholders, such as project donors, helps you track any changes, reassign tasks and foster a cohesive team environment.

Cost risk

A shortage or mismanagement of project funds resulting from an inflated budget or other constraints is a threat to the project's completion. When the project cost is higher than the budgeted funds, the risk might shift to other operations and workforce segments. The reduction of the funds may also contribute to an occurrence of a scope risk.

This can be mitigated by making a high budget compared to the amount of money needed for the requirements

III. Explain the five stages of your project.

- Ideation
  Coming up with a project Idea "Share A Meal" a Smart Food Delivery System Using NLP
- Defining the Software Processes, Here i will look at the software development lifecycle to use and the development methodology for the project
- Planning and Budgeting
  Laying out different plans on how the project is going to be executed
  listing and calculating out the budget for the project

- Modelling and Desiging
  Visualization or Simulation of the project/ system will be viewed in this issue
  Also environment models
- Executing the project plan
  Laying out the different basic features of the application and splitting them into several modules for easy development

Is your project objective driven or product driven, elaborate on the difference.

My Project is Object driven.

This is because my main objective is to find a solution to the end-user's problem for example *Share A Meal*, a ***smart food delivery system*** will make user interaction of the system as easy and intuitive as possible and will bridge a gap between people and the food areas. With Share A Meal one can order food and other related food supplies at any point in time easily with the help of *an artificial intelligence (AI) powered virtual assistant (chatbot)*.

Difference Between product driven and object driven

Product-Driven Projects Identify the root cause of a problem and then develop a previously determined or designed product. That means that only the project's implementation phase remains.

Whereas;

The main goal of the final outcome is taken into account in object-driven projects. However, building the finalized fully functional expected version at the initial iteration does not require much effort. The incremental approach is used until the final goal is achieved.

Question Two

I. Explain the Agile Methods

The Agile methodology is a way to manage a project by breaking it up into several phases. It involves constant collaboration with stakeholders and continuous improvement at every stage. Once the work begins, teams cycle through a process of planning, executing, and evaluating. Continuous collaboration is vital, both with team members and project stakeholders.

The Agile Methods

1) Kanban

This method uses visual methods for developing and managing projects. This helps in increasing the visibility of teams as the teams can see the progress through every stage of development and prepare for the upcoming tasks to deliver the product in time

This method requires thorough interaction and transparency to enable the team members to be equipped with the right stage of development at any time and have a cohesive flow of work at all times.

2) Scrum

Similar to Kanban, Scrum breaks down the development phases into stages or cycles called sprints The development time for each sprint is maximized and dedicated, thereby managing only one sprint at a time.

3) Extreme Programming (XP)

Extreme Programming (XP) is a methodology that emphasizes teamwork, communication, and feedback. It focuses on constant development and customer satisfaction. Similar to scrum, this method also uses sprints or short development cycles.

4) Crystal

Similar to other methodologies of Agile, Crystal also addresses prompt delivery of software, regularity, less administration with high involvement of users, and customer satisfaction.

The Crystal family advocates that each system or project is inimitable and necessitates the solicitation of diverse practices, processes, and policies to achieve the best results, earning the name of the most lightweight methods of agile methodology.

5) Dynamic Systems Development Method (DSDM)

To address the need for a standard industry charter for the swift delivery of software, the Dynamic Systems Development Method (DSDM) was developed. DSDM gives a comprehensive structure that is defined and modified to create a plan, execute, manage, and scale the procedure of software development.

6) Lean Software Development

This agile methodology is based on seven principles:

Deleting what doesn't matter- Anything that doesn't add value is removed from the project

Quality development- The discipline and control of the number of residuals created are essential to quality development

Knowledge creation- The team is driven to document the entire infrastructure to preserve this value in the future

Defer commitments- This point encourages the team to focus less on planning and anticipating ideas without first having a prior and complete understanding of the business requirements

Delivery promptly- Providing value to the customer as quickly as possible

Respecting the team- two essential points are communication and conflict management

Optimize the whole- To create a flow of true value, the development sequence must be perfected enough to remove errors from the code

II. Draw a product break down structure for your project

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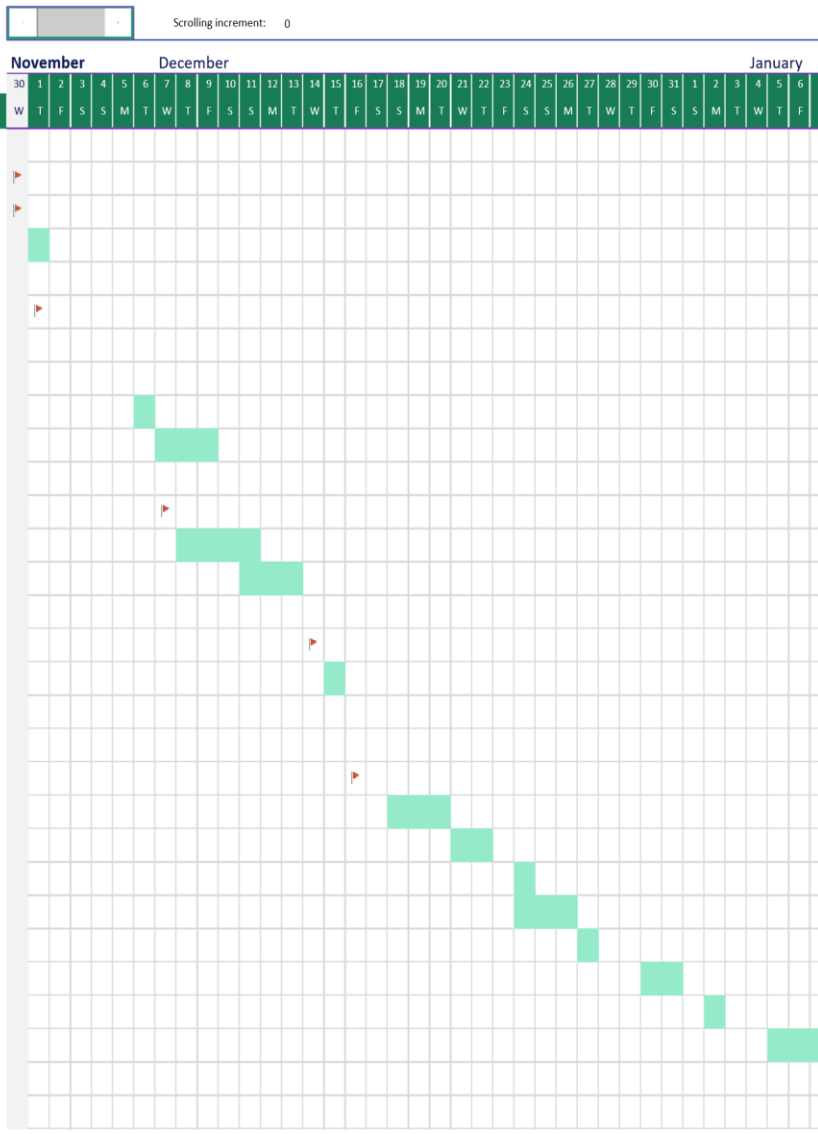
Project start date: 30/11/2022

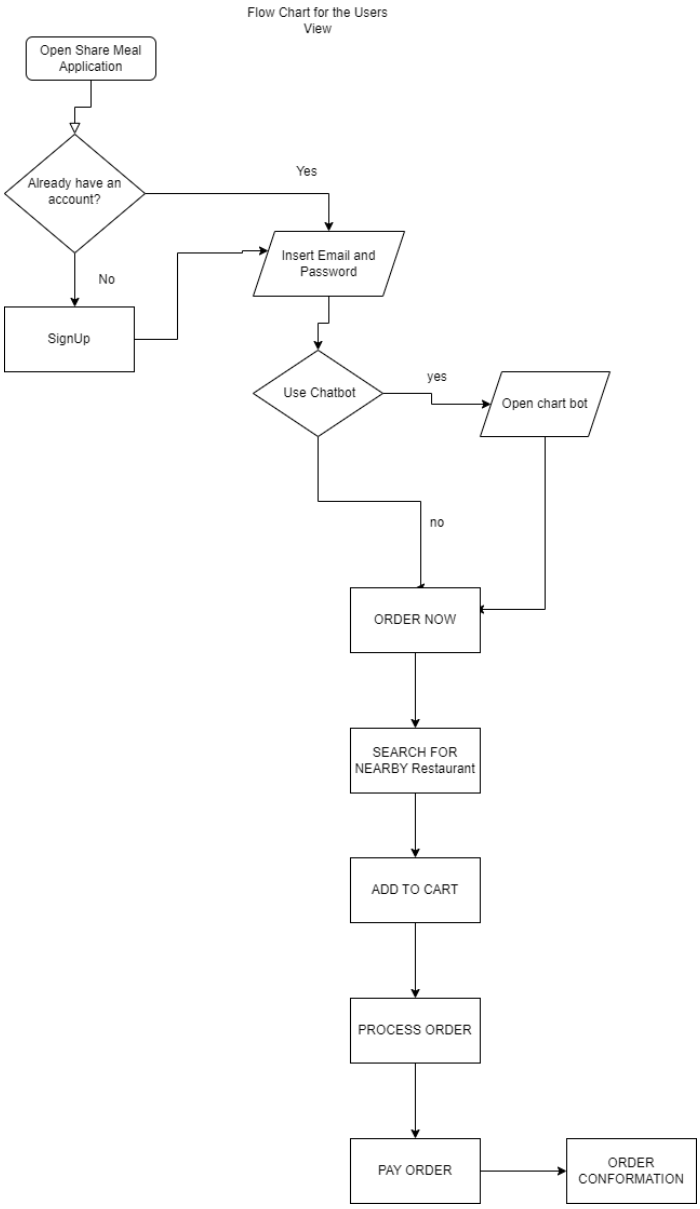
Milestone marker: 1

Scrolling increment: 0

Milestone description	Assigned to	Progress	Start	Days
IDEATION	Jovans			
WRITE UP		100%	30/11/2022	1
PROBLEM STATEMENT		100%	30/11/2022	1
Solution		100%	30/11/2022	3
Defining the Software Process				
Software development lifecycle		80%	01/12/2022	1
Definig The Methodology		90%	01/12/2022	2
Planning and Budgeting				
Laying out different plans for execution		30%	05/12/2022	3
Listing and calculating out the budget		40%	06/12/2022	5
Modelling and Designing				
Visualization of the System		50%	07/12/2022	1
Simulation of the System		40%	07/12/2022	6
Models		30%	10/12/2022	5
Executing the Project Plan				
Laying out the different basic features		40%	14/12/2022	1
Splitting them into several modules		20%	14/12/2022	3
				1
Development OF The Custmer App				
Listing which functionalities to start with		10%	16/12/2022	1
Registration and Login Page		60%	17/12/2022	5
Integerating Google Maps API		0%	20/12/2022	4
Adding Restaurants to the App		0%	23/12/2022	3
Food Items and Menus		0%	23/12/2022	5
Search Filtration		0%	26/12/2022	3
Payment gateway Integration		0%	29/12/2022	4
Real Time Tracking		0%	01/01/2023	3
Delivery options		0%	04/01/2023	7
Push Notifications		0%	10/01/2023	3



III. Draw the product flow diagram and the derived activity network



Question Three

Define the different types of contracts in software projects

1. Fixed Price Contract

   Fixed Price contracts are used when the scope of work is clearly defined and the requirements are well understood. Once the scope is clearly defined, then it is expected that the seller will come up with a fixed price quotation for the agreed scope of work

   There are 3 different flavors of fixed-price contracts as below:

   - Firm Fixed Price Contract
   - Fixed Price with Incentive
   - Fixed Price with Economic Price Adjustment

2. Time and Material Contract (T&M)

   Time and Material contracts are very popular contract type which is used for regular purchases of standard items. Items may include augmenting temporary manpower for the project with well-defined skills and expertise levels. Item also includes standard materials which may be needed for consumption in the project.

3. Cost Reimbursable Contract (CR)

   In cost reimbursable contract the buyer pays the actual cost incurred by the seller and an additional fee or profit. There are 2 components paid separately in this kind of contract. While the actual cost is reimbursed as per actual, the fee amount is somewhat decided upfront.

   Following are some of the flavors of Cost-Reimbursable contracts.

   - Cost plus a percentage of the cost (CPPC)
   - Cost plus fixed fee (CPFF)
   - Cost plus Incentive Fee (CPIF)
   - Cost plus award fee (CPAF)

4. Unit Price Contract

   This type is less popular than the other three options and is also known as an hourly rate contract. It combines the elements of the FP and CR models, just like T&M. However, this option differs on setting the price per item or unit not per hour rate along with the receipts for all the resources used in the overall process.