

Final Assignment of Software Engineering

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Full Stack Training Program

Budgeting:

Staff's Position	Salaries per person per month	Skill
Scrum Master (1)	5500	Normal
Business Analysts (1)	3500	Normal
UI/UX (1)	3000	Normal
Architect (1)	3200	Normal
Database developer (1)	3000	Normal
Software Developer (3)	3000	Normal
QA testers (1)	2500	Normal

Participation in various phases:

Scrum Master will co-ordinate the whole project from start to end.

Business Analysts: After the scrum master proposes the project, the business analysts interpret the business requirements and try to match the final software product with the expected business value

UI/UX- After the business analysts analyze the effect of the final product, the UI focus on the design interface and interaction with the user. UX emphasizes user experience when they will use the product

Architect: After UI/UX's analysis, the architect design and develop the software application that includes tools, coding standard and platform to be used.

Database Developer: As this software will be used by several ends, the database developer will be required to manage and store all the data that are coming from different ends.

Software developers: In this stage actually software developers start to build the computer programme and new application for mobile and desktop use.

QA Tester: After the software is developed by the developers, the QA tester test the effectiveness, outcomes and defects of the actual product .

Budget Estimation using COCOMO II model:

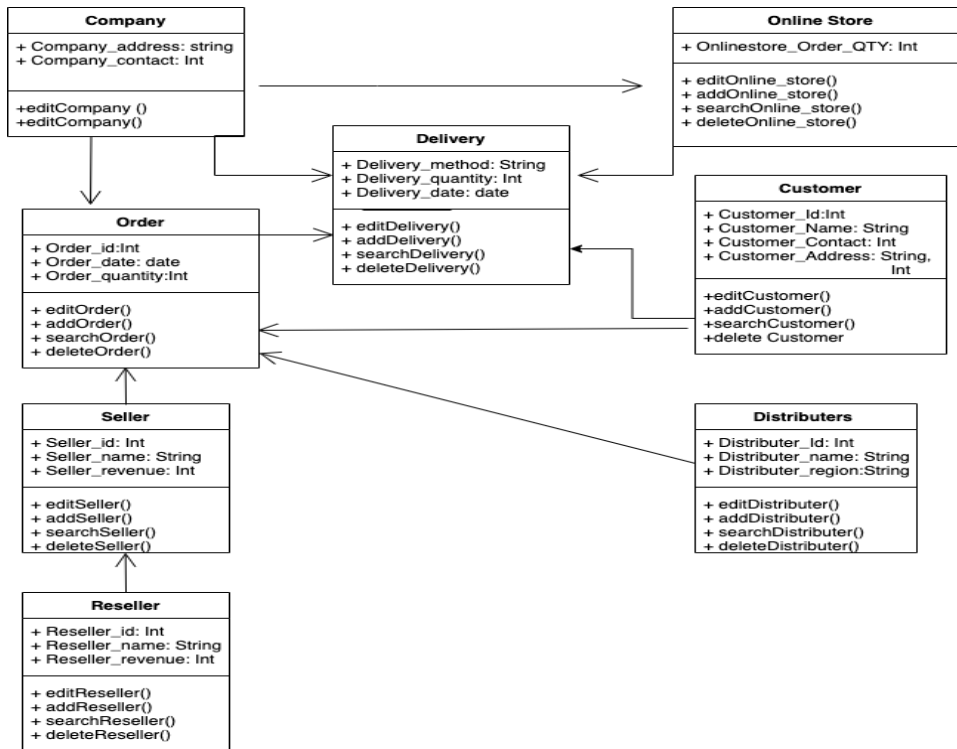
Application composition:						
Forms:		Tables in database				
views:	<4	<8	8+			
<3				Very low	4	
3-7				Low	7	
>8			10	Normal	13	
				High	25	
Reports:		Tables in database			Very high	50
sections:	<4	<8	8+			
0 or 1	0					
2 or 3	0					
4+	0		12			
3GL components:	10					
Reuse%:	25					
Object points:	82					
NOP New Object Point:	61.5	$(Object\ points) * (100 - Reuse\%) / 100'$				
PROD Developers experience and skills:	Normal	13				
<u>PM Person months:</u>	<u>4.731</u>	person months	<i>NOP / PROD</i>			

c) Profit Margin

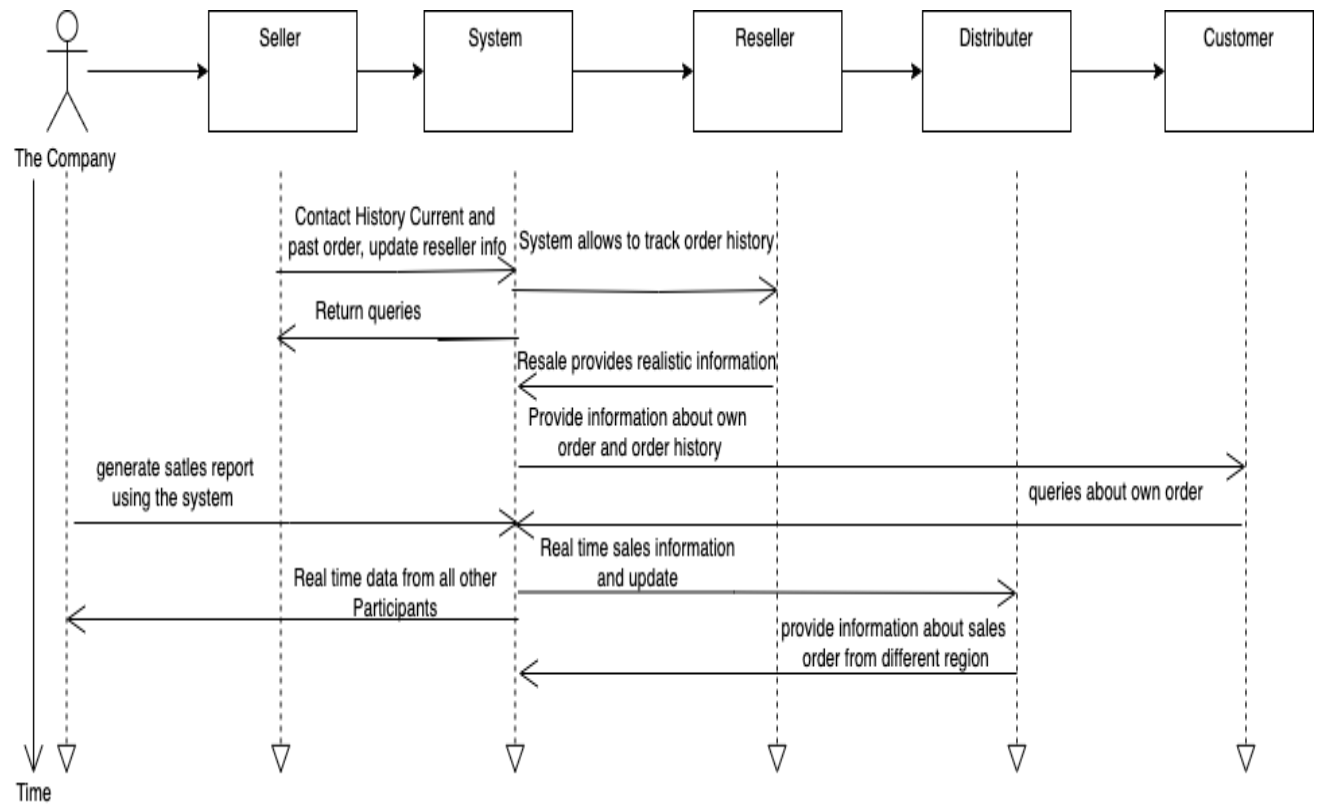
Person-months (not including vacations)	4.731	Person-months	
Estimated length	8.0	months	
Average salaries(gross)	3,300.0	€	
Size of the team	9.0	persons	
Gross salary	15,612.3	€	
Side costs	50.0	%	
Mandatory ancillary costs of salary	7,806.2	€	
Holiday pay for the project	1,249.0	€	
Total wage costs	24,667.4	€	
*Work and software components purchased elsewhere	2,000.0	€	*Subscription to cloud, database and other software purchases.
*Server costs	1,500.0	€	*Software purchases
*Trips (eg to customer meetings)	1,000.0	€	*customer meetings and logistical expenses.
*Other costs (eg printed matter)	1,200.0	€	*Miscellaneous
Total other costs	5,700.0	€	
Office rent per month	1,500.0	€	
Other fixed costs per month (cleaning, office equipment, etc.)	400.0	€	
Employees in the company	16.0	persons	
Personal developer per person tools and software licenses	800.0	€	
Overhead	2.7	%	
Rents allocated to the project	443.5	€	
Project-specific tools and software licenses	105.1	€	
Other fixed costs that are allocated to the project	118.3	€	
Total fixed / overhead costs	666.9	€	
TOTAL PROJECT COSTS	31,034.4	€	
Profit margin (percentage)	30.0	%	
Profit	9,310.3	€	
TAX-FREE PRICE OF THE PROJECT (VAT 0%)	40,344.7	€	
TAX PRICE OF THE PROJECT (VAT 24%)	50,027.4	€	

I have used COCOMO II model to estimate the profit margin though I know COCOMO II is not 100% effective but it gives us an overview about the project budget.

Answer 2: Class Diagram



b) Sequence Diagram



c) Layout Diagram

Company
People 84
Feedback 42
Statistics
Settings
Profile
Log Out

Template name

Company Ltd.

Subject

%USER_FULL_NAME%

Insert System Variable

Message

Company Ltd is one of the leading supplier of outdoor Bathtubs and provider of Installation services.

%USER_FULL_NAME%

%USER_EMAIL%

%USER_PROFILE_COMPLETENESS%

%USER_NUM_SUCCESS_TRADES%

%USER_FULL_NAME%

%USER_EMAIL%

%USER_PROFILE_COMPLETENESS%

%USER_NUM_SUCCESS_SELLS%

Insert System Variable

Message Type

Email + Push

Popular Categories

Hot tubs

Send to Group

☒ Top Management
☐ Marketing Department
☒ Design Department
☐ Financial Department
☐ Supply Department

Set Type

☐ News
☒ Reports
☐ Documents
☐ Media
☐ Text

Save Template

Cancel

Delete Template

320x200

Products

Luxurious Outdoor Bathtub

View

Add to Cart

Buy

320x200

Installation Service

Order

Cancel

d)

Class diagram is used as a high-level UML plan as class diagram is the main building block in object-oriented modelling. They can clearly show the structure of a particular system illustrating all the classes, attributes, operations and relationships between them. It shows a static structure of a system. Then we proceed with the sequence diagram. Sequence diagram is dynamic in nature. They are very useful to show message flow from one object to other. Sequence diagram are easier to generate and update. Layout diagram is a primary overview of the sales software system that is being developed. Though throughout this process of development, many things can change during the whole process.

Answer 3

Personal descriptions

Name	Details	Goals
1. Sanna lahtinen	Age: 40 Job title: Manager Country: Finland Gender: Female Character: Calm, Friendly, ability to work under pressure.	Cost minimization through the use of this sales system and Getting insights form the real time data.
2. Astrid M.	Age: 26" Job title: Seller Country: Sweden Gender: Male Character: Energetic, passionate, Hard working.	By using this sales system he wants to increase sales estimates and optimize customer data to increase sales.
3. Laura R.	Age: 34 Job title: Distributer Country: Denmark Gender: Female Character: Focused , Persistent, Honest.	Getting insights about regional sales and customer data and company reports.
4. Arvo T.	Age: 37 Job title : Entrepreneur Role : Customer Country : Finland Gender: Male. Character: Critical, Vocal.	As a user of this system, he wants to track his order and view past history and also know about company products
5. Elsa S.	Age: 60 Job title: Retired Role: Customer Country: Sweden Gender: Female Character: Quality conscious	As a loyal customer to this brand, she wants to know about the maintenance facilities and wants to track service history.

6. Rockey F.	Age: 29 Job title : Coder Role: Customer Country: Denmark Gender: Male Character: Social, Openness	His goal is pretty much clear that he wants to have an easy user interface.
7. Vessa Q.	Age: 33 Job title: Reseller Country : Finland Gender: Male Character: Workaholic, Focused	He wants to have information about loyal customers of the brand and to create new selling techniques to approach the customers through the system.

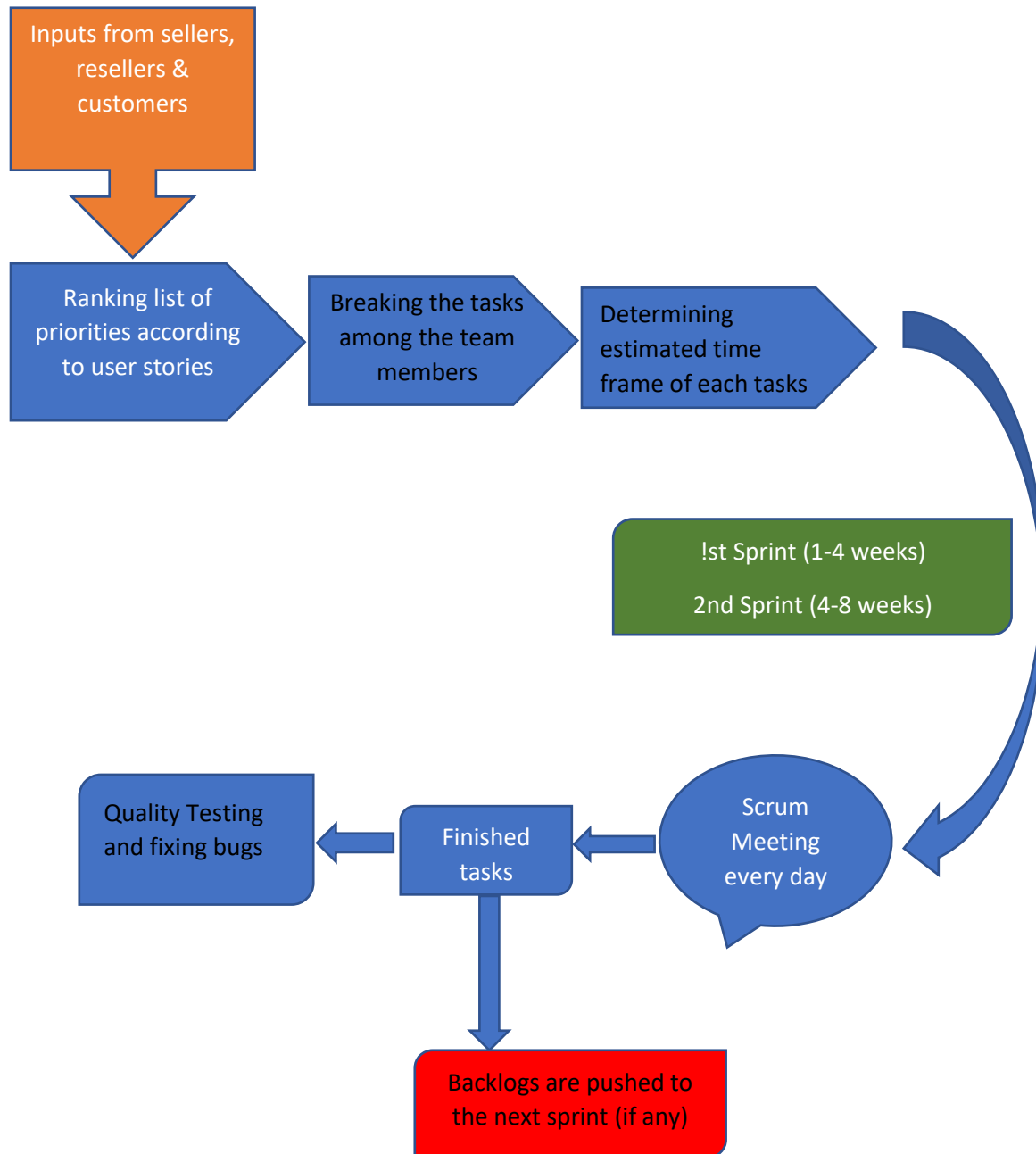
Answer 4:

User Stories

User Stories	Priority (P)	Estimates (P1 time frame: first 30 days) (P2 time frame: next 30 days)
1. As a manager of the company, I want to see open sales dashboards and all the sales and customer related data and also wants to have a aggregate view of the data and download the data for further analysis.	P1: Managing and storing all the data in the cloud and making it available to the managers of the company. P2: Showing the real-time dashboard with the available data.	P1 is estimated to be developed in the first sprint. P2 is estimated to be developed in the second sprint.
2. >(As a seller , I want to see customer contact and order history and status and being able	P1: Accumulating all the customer related data in the data storage.	P1 is estimated to be developed in the first sprint.

update information in real-time. I also want to see and update reselling data.	P2: Developing the system in a way so that the sellers can update reseller information.	P2 is estimated to be developed in the second sprint.
3. As a reseller , I want to check own orders and order history.	P2: Generating a system that can show the resellers their own performance in real-time.	P2 is estimated to be developed in the second sprint
4. As a distributor , I want to check the company's sales status and regional sales data.	P2: Develop programs to accumulate region specific sales data.	P2 is estimated to be developed in the second sprint
5. As a customer , I want a easy user interface which will allow me to check status of my current and past orders and also want to update my contact and address and want to provide feedback through the system and contact with the company if needed.	<p>P1: Develop coding to gather all the customer order related data into one place.</p> <p>P2: Develop the system in a way so that a customer can interact with the system by providing feedback.</p> <p>P3: Providing a easy way to contact with the company.</p>	<p>P1 is estimated to be developed in the first sprint.</p> <p>P2 is estimated to be developed in the second sprint.</p>

Development Roadmap for 1st two sprints



Answer 5

a) The team used Scrum.

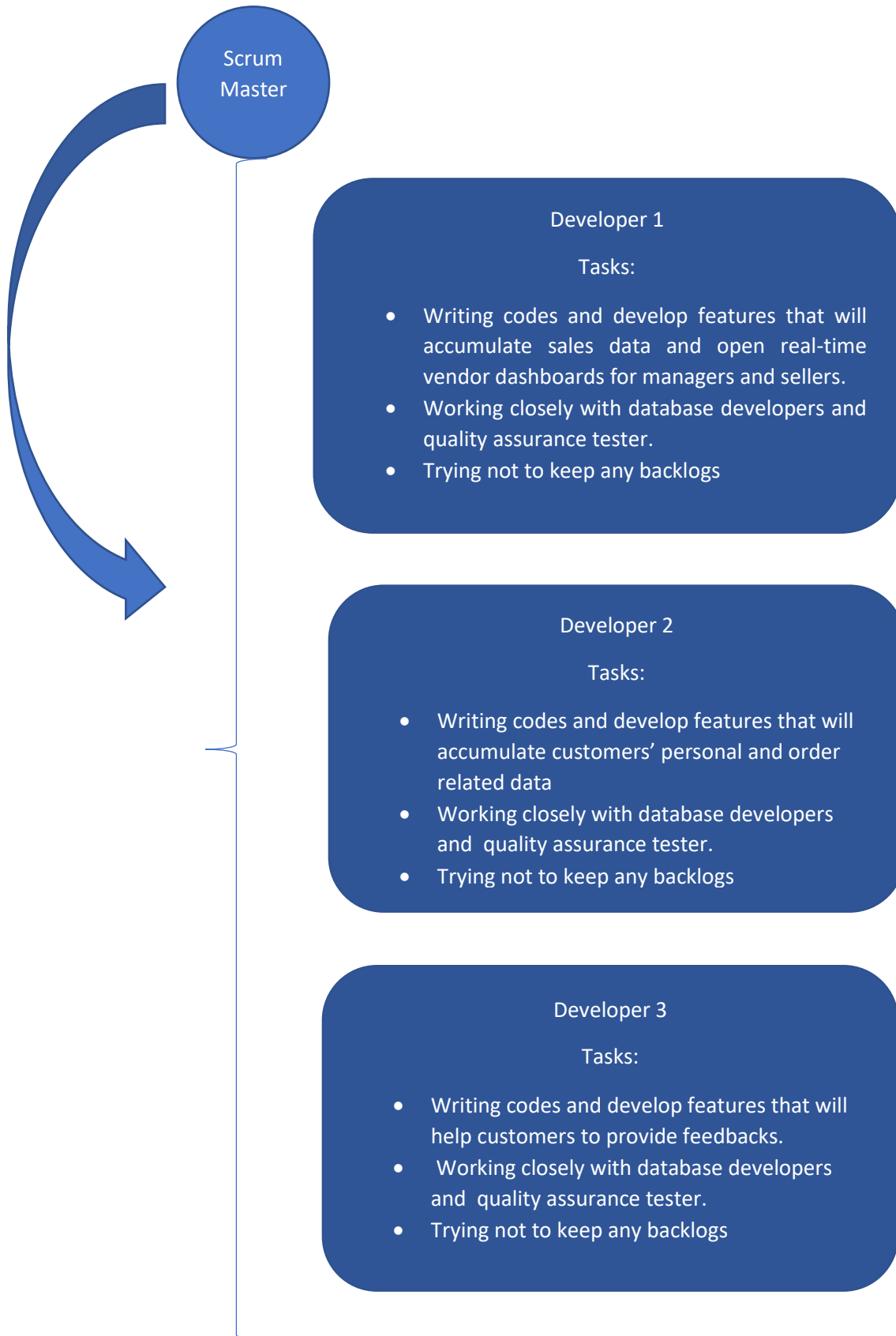
Justifications for using Scrum:

1. Increase productivity and lower cost
2. Delivers true value to customer
3. High quality product
4. Get product to market faster
5. Improved personnel satisfaction
6. Better client relationship
7. Great communication
8. Less technical error
9. Fully skilled teams get the job done
10. Rapid reaction to customer requirements

b) As the software has set the priorities according to the user stories there is a chance that one or more task may not be completed during the sprint time so there can be backlogs which have to be pushed to the next sprint. This can be a major concern because it can make the process slow and lengthy.

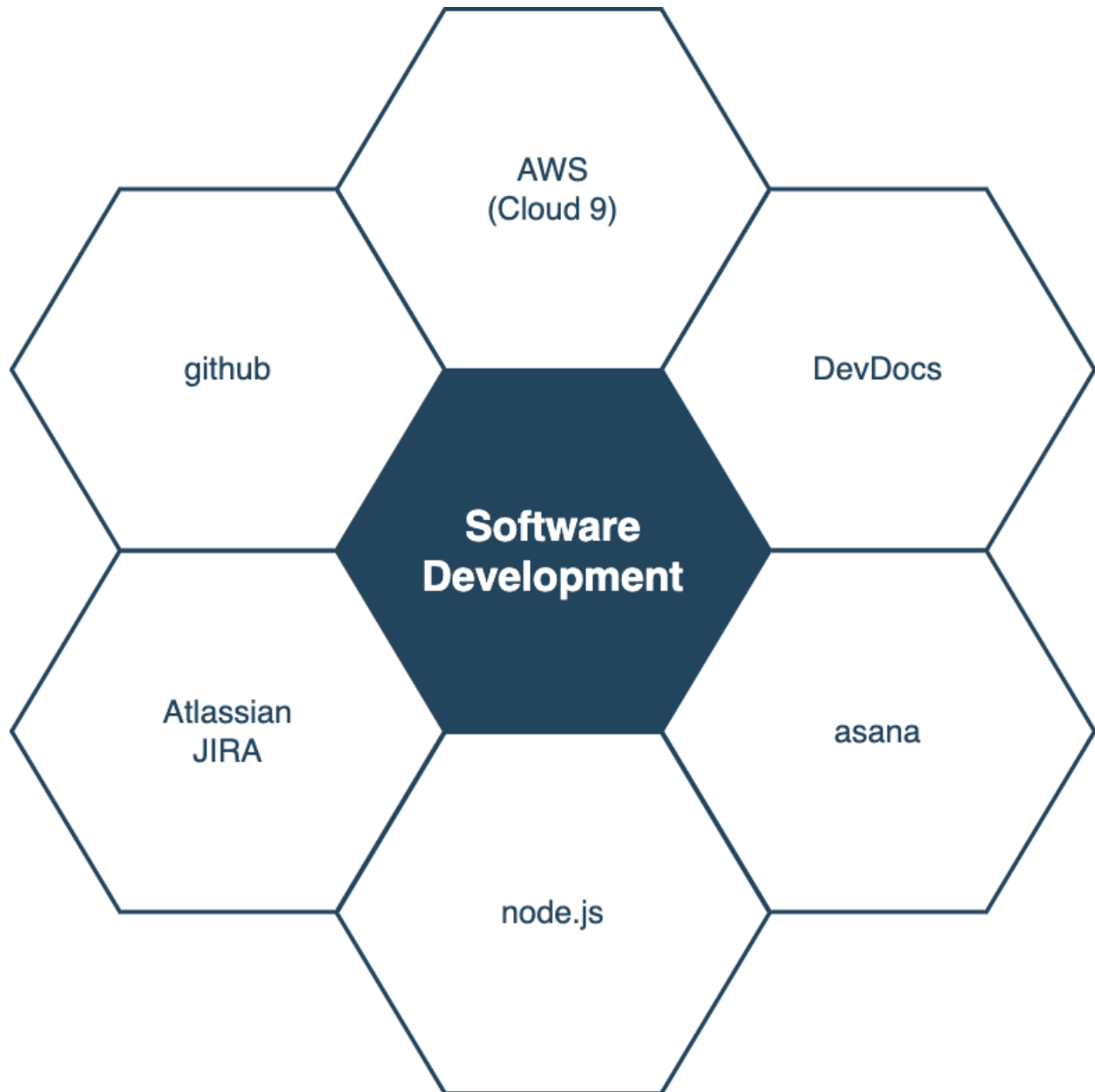
c) The priorities (P1) are estimated to be completed in the first sprint (1-4 weeks) and the priorities (P2) are estimated to be completed in the second sprint (4-8 weeks).

d) Assigned task



Answer 6

a) Tools



b) Reason behind selecting tools

Node.js is a development platform for all kind of apps user. This platform is established as an open source platform. It has huge libraries.

AWS (Cloud 9) This is also really important for developers. AWS used in various purpose such as to create, test, debug and run code in the cloud. Developer liked its autosuggestion it really help them to work more effectively.

GitHub: It's a really blessing for the project manager and developers as well. They can work confidentially.

Jira : It can be used for tracking and project management.

DevDoc : Mostly known as a clean and systematically arranged Web UI. It has various features such as dynamic search option, dark theme, mobile version and supportive cloud system.

Asana: This is really very popular among the Developers. It has huge aspects. Mainly its used for communication purpose among the company and teams. You can easily customize it also allow you to break down the task and sets goals for each and every team members.

c) Estimated time needed in building up the all the tools is about to 4-8 months in this case we can say that, it totally depends on the project complexity