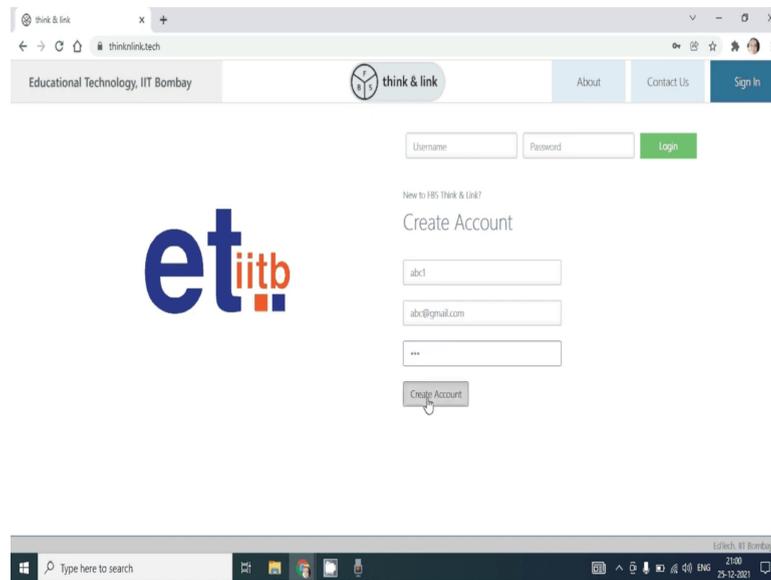


**Software Conceptual Design**  
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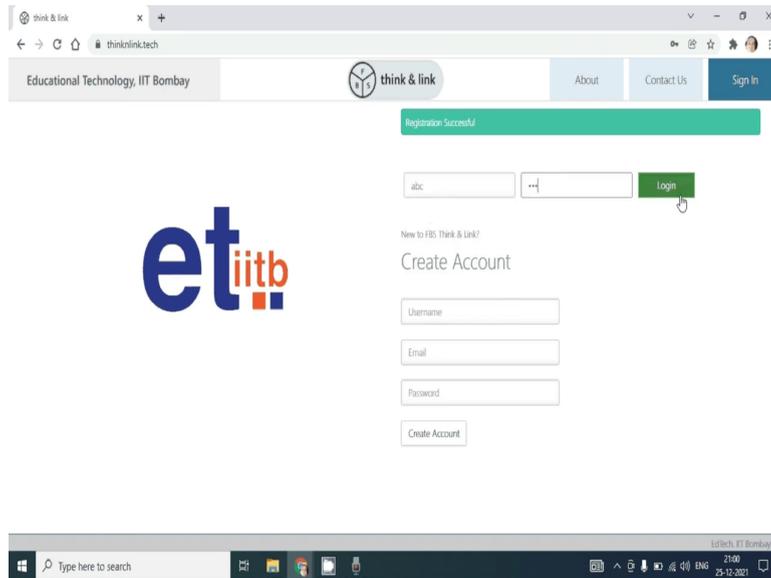
**Lecture - 12**  
**Creating Software Conceptual Designs using think and link**

(Refer Slide Time: 00:05)



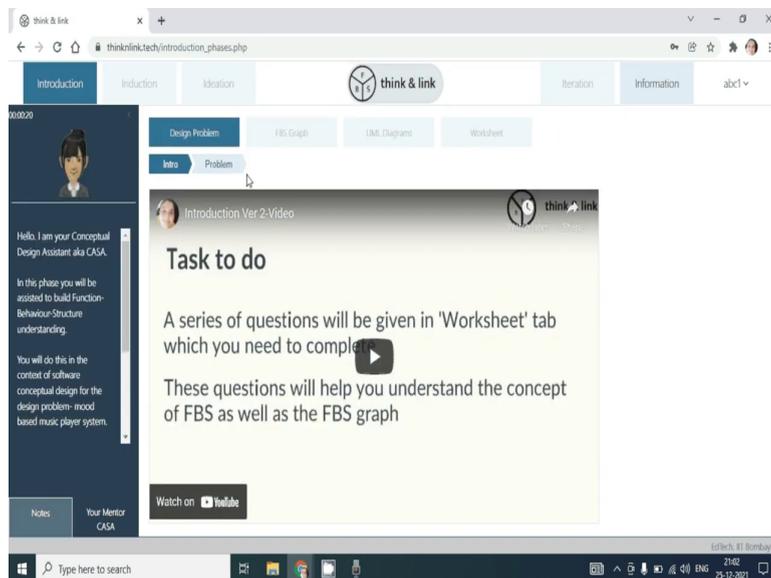
This is the URL for the think and link learning environment. Once you arrive at this page you will have to create a username for yourself; let us say for example, I create a username, please provide an email id as well as a password.

(Refer Slide Time: 00:38)



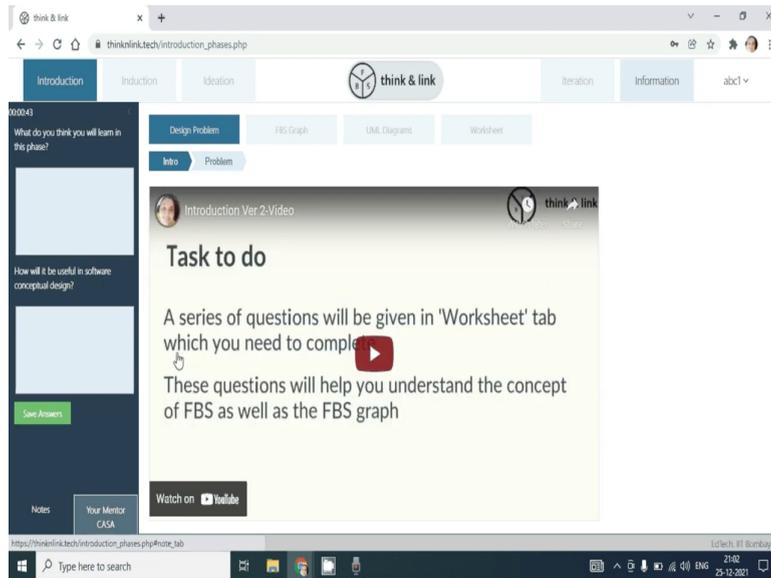
Once you create an account, you use the username and the password to log in.

(Refer Slide Time: 00:48)



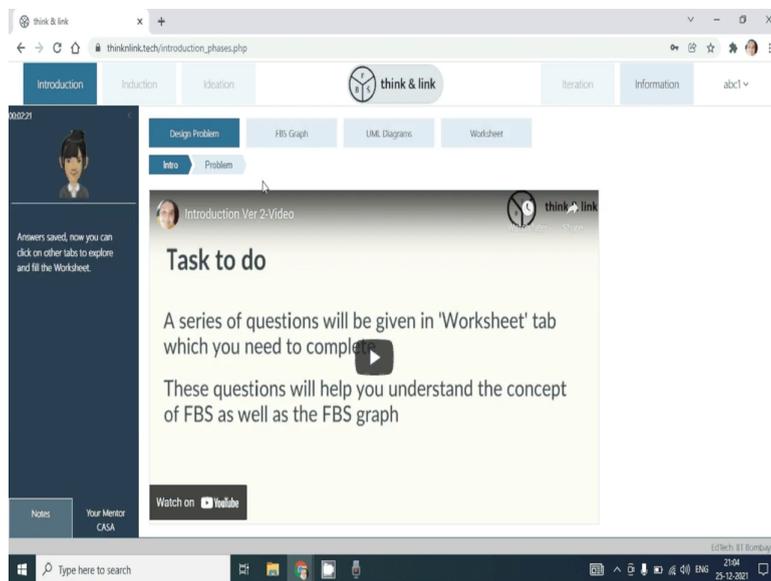
Once you log in you will arrive at this page, where you see the phase that you are in the introduction phase. You have the pedagogical agent who will give you prompts throughout the learning environment.

(Refer Slide Time: 01:09)



You also have a place where you could write your notes. In this video, you will be taken through the task which you have to be doing, once you complete the task the other tabs will automatically be enabled.

(Refer Slide Time: 01:29)



Once you save your answers in this phase, you will be provided with the FBS graph, as you can see.



(Refer Slide Time: 01:48)

The screenshot shows a web browser window with the URL [thinklink.tech/introduction\\_phases.php](http://thinklink.tech/introduction_phases.php). The page has a navigation bar with tabs for 'Introduction', 'Induction', 'Ideation', 'Iteration', and 'Information'. Below this is a sub-navigation bar with 'Design Problem', 'FBS Graph', 'LIME Diagrams', and 'Worksheet'. The 'Worksheet' tab is active. On the left, there is a sidebar with a user profile and instructions: 'Use the information page and the FBS graph to identify the different types of the nodes.' The main content area is titled 'Task1' and contains a preamble: 'In this task you will get to look at the FBS graph and identify the different types of the nodes. Use the visual cues in the FBS graph and the pointers provided by CASA.' Below the preamble are three questions, each with a text input field: 'Q Using the FBS graph for mood based music player and list 3 function node elements.', 'Q Using the FBS graph for mood based music player and list 3 structure node elements.', and 'Q Using the FBS graph for mood based music player and list 3 behaviour node elements.' A vertical progress indicator on the left shows steps 1 through 6, with step 1 highlighted. At the bottom right of the task area are 'Next' and 'Previous' buttons. The Windows taskbar at the bottom shows the time as 21:04 on 25-12-2021.

A worksheet where you will have to complete a set of tasks.

(Refer Slide Time: 01:50)

The screenshot shows the same website as the previous slide, but now displaying 'Task2'. The sidebar instructions are: 'Identify the FBS element in the statement, refer to the FBS graph and definitors in the information page to evaluate and answer.' The main content area is titled 'Task2' and contains a preamble: 'In the previous task you characterised the different types of nodes visually. In this task you will get to look at the FBS graph on screen and reason the purpose of different types of nodes. Use the visual cues in the FBS graph and the pointers provided by CASA.' Below the preamble are three questions, each with a radio button for 'True' or 'False' and a text input field for 'Give support for the choice (true/false)'. The questions are: 'Q Evaluate the statement - "Automatic mood detection is a functionality provided by the proposed mood based music player"', 'Q Evaluate the statement - "Voice recognition algorithm is a logical component in the proposed mood based music player"', and 'Q Evaluate the statement - "The proposed mood based music player implements the behaviour which allows the user to request for any song"'. The progress indicator shows step 2 highlighted. At the bottom right of the task area are 'Next' and 'Previous' buttons. The Windows taskbar at the bottom shows the time as 21:04 on 25-12-2021.

(Refer Slide Time: 01:51)

think & link

thinklink.tech/introduction\_phases.php

Introduction Induction Ideation think & link Iteration Information abc1 v

Design Problem FBS Graph LIME Diagrams Worksheet

Task

0002-42

Use the previously identified FBS (Function, Behaviour, Structure) design elements, definitions and your understanding of FBS to answer the question.

Notes Your Mentor CASA

Task3

Preamble - Until now you have reasoned and characterised the different types of nodes in FBS graph. In this task you will explicitly state your understanding of the terms E, B and S. Use the previously identified FBS (Function, Behaviour, Structure) design elements, definitions and your understanding of FBS to answer the following questions.

Q Give description of your understanding of function

Q Give description of your understanding of structure

Q Give description of your understanding of behaviour

Next Previous

https://thinklink.tech/introduction\_phases.php#Task3

EdTech, IIT Bombay 2194 25-12-2021

Type here to search

(Refer Slide Time: 01:53)

think & link

thinklink.tech/introduction\_phases.php

Introduction Induction Ideation think & link Iteration Information abc1 v

Design Problem FBS Graph LIME Diagrams Worksheet

Task

0002-43

Use the information page and the FBS graph to list the different connectors based on visual information.

Notes Your Mentor CASA

Task4

Preamble - In this task you would list the different connector types of the nodes in the FBS graph. Look at the connectors/links in the provided FBS graph and identify the different types of connectors and the types of nodes that they connect. Use the visual cues in the FBS graph and the pointers provided by CASA.

Q Note down all the identifying the connectors that connects the different FBS design element pairs (E, S, B, F, B, S, F, B, S, F, F, S, S, B, B). For e.g., Combines: B, B

Next Previous

https://thinklink.tech/introduction\_phases.php#Task3

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(Refer Slide Time: 01:54)

think & link

thinklink.tech/introduction\_phases.php

Introduction Induction Ideation think & link Iteration Information abc1 v

Design Problem FBS Graph LIME Diagrams Worksheet

Task

0002-44

Look at the provided FBS graph and identify the pairs of (F-S, S-B, F-B, S-F, B-S, F-F, S-S, B-B) e.g. S-F: Connectivity Mechanism implements Login functionality.

more

Notes Your Mentor CASA

Task 5

Preamble - In this task you would list the concrete examples of pairs like (F-S, S-B, F-B, S-F, B-S, F-F, S-S, B-B) and trios (FBS, SBF, BSF) from the provided FBS graph. Use the visual cues in the FBS graph and the pointers provided by CASA.

Q1 Identify as many pairs of F-S, S-B, F-B, S-F, B-S, F-F, S-S, B-B from FBS graph and list them. For e.g., S-F: Connectivity Mechanism implements Login functionality

Q2 Identify as many trios of FBS, SBF, BSF from FBS graph and list them. For e.g., FSB: Mood detection is implemented by voice recognition algorithm which is utilized when user logs into the system

Next Previous

https://thinklink.tech/introduction\_phases.php#Task5

6/17/2021, 11:50:41 AM

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2194 25-12-2021

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think & link

thinklink.tech/introduction\_phases.php

Introduction Induction Ideation think & link Iteration Information abc1 v

Design Problem FBS Graph LIME Diagrams Worksheet

Task

0002-46

Look at previous concrete examples of trios and abstract their relation (Muzg: Function is implemented by Structure which gets utilized during user Behaviour).

Notes Your Mentor CASA

Task 6

Preamble - In the previous task you worked on specific examples of pairs and trios from the graph. In this task you are required to abstract the relationship of the trio F, S and B.

Q1 Create sentences from the word bank below such that it explains the relationship between the trio F, S and B. For e.g., Function is implemented by Structure which gets utilized during user Behaviours.

Next Previous

https://thinklink.tech/introduction\_phases.php#Task6

6/17/2021, 11:50:41 AM

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2195 25-12-2021

(Refer Slide Time: 01:58)

The screenshot shows a web browser window with the URL `thinklink.tech/introduction_phases.php`. The page has a navigation bar with tabs for 'Introduction', 'Induction', 'Ideation', 'think & link', 'Iteration', and 'Information'. Below this, there are sub-tabs for 'Design Problem', 'FBS Graph', 'UML Diagrams', and 'Worksheet'. The 'UML Diagrams' tab is active, displaying a video player. The video title is 'Creation of Component diagram from FBS graph'. The video content includes a list of four steps:

1. For every structure node create a component with the name of the structure
2. Ensure the hierarchy and relationship between the structure nodes reflects in the component diagram
3. If there exists components which do not implement a function check if the component is required
4. For every F-B-S link (regardless of direction) ensure that there exists (s) in the component diagram

The video player also includes a 'Watch on YouTube' button and a 'Your Mentor CASA' note.

As well as a UML diagram corresponding for the FBS graph.

(Refer Slide Time: 02:06)

The screenshot shows the same web browser window, but now the 'Worksheet' tab is active. The page displays a task titled 'Task6'. The task instructions are:

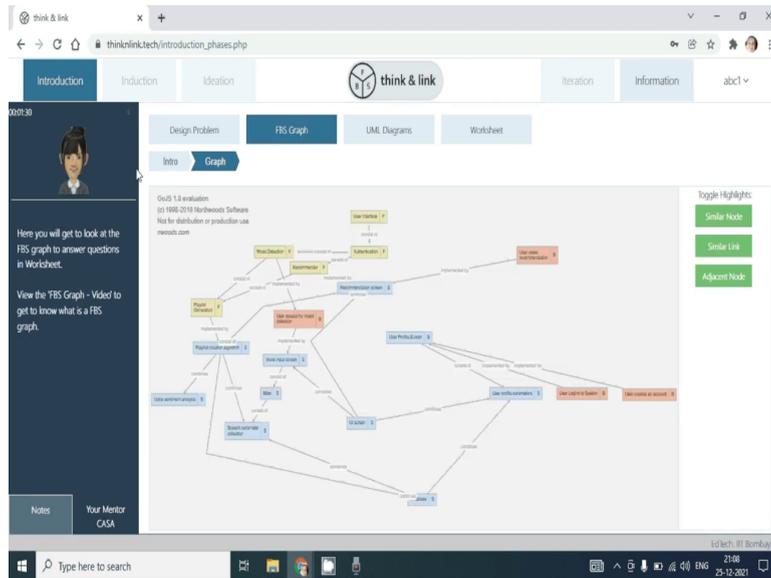
Preamble - In the previous task you worked on specific examples of pairs and trios from the graph. In this task you are required to abstract the relationship of the trio E, S and B.

Q. Create sentences from the word bank below such that it explains the relationship between the trio E, S and B. For e.g., Function is implemented by Structure which gets utilised during user Behaviours

Below the instructions is a text input field for the user's answer. On the left side of the task area, there is a vertical list of numbers 1 through 6, with the number 6 highlighted in black. At the bottom right of the task area, there are 'Hint' and 'Previous' buttons.

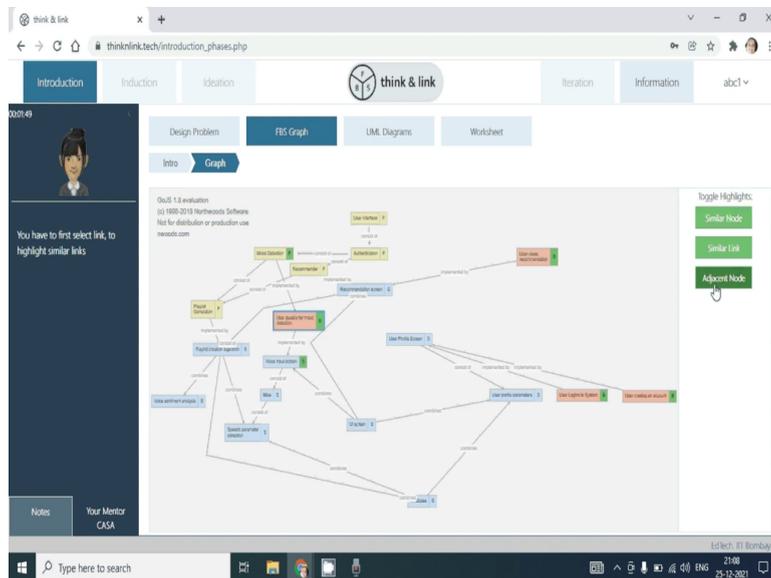
Once you complete the worksheet question and answers, this phase will end.

(Refer Slide Time: 02:10)



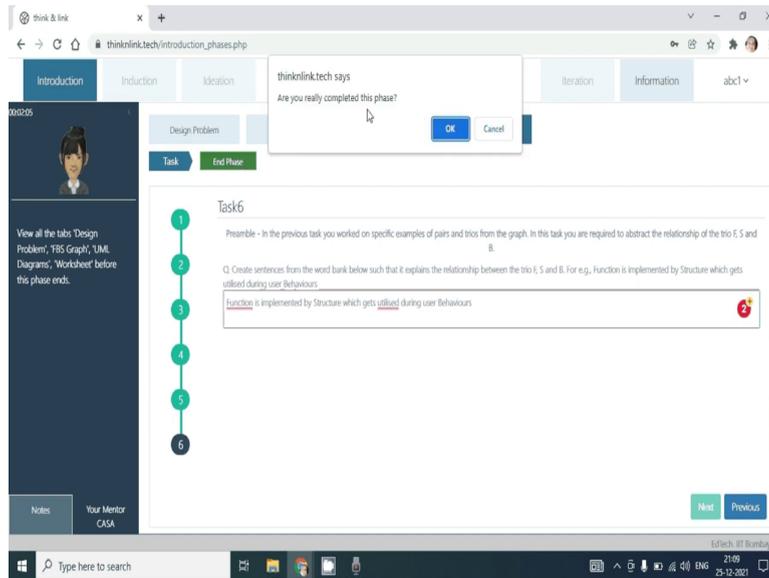
In the introduction phase, you are required to look at the FBS graph, explore the FBS graph via the various interactions possible.

(Refer Slide Time: 02:24)



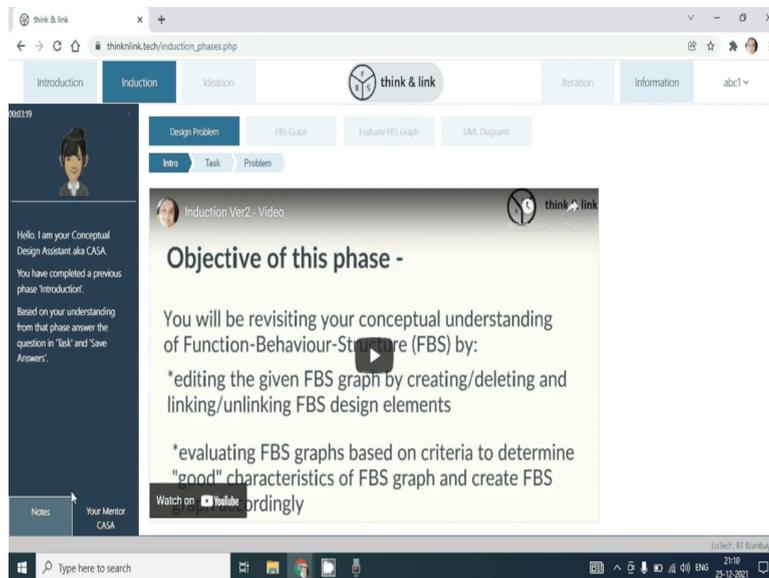
Complete the answers in the worksheet.

(Refer Slide Time: 02:34)

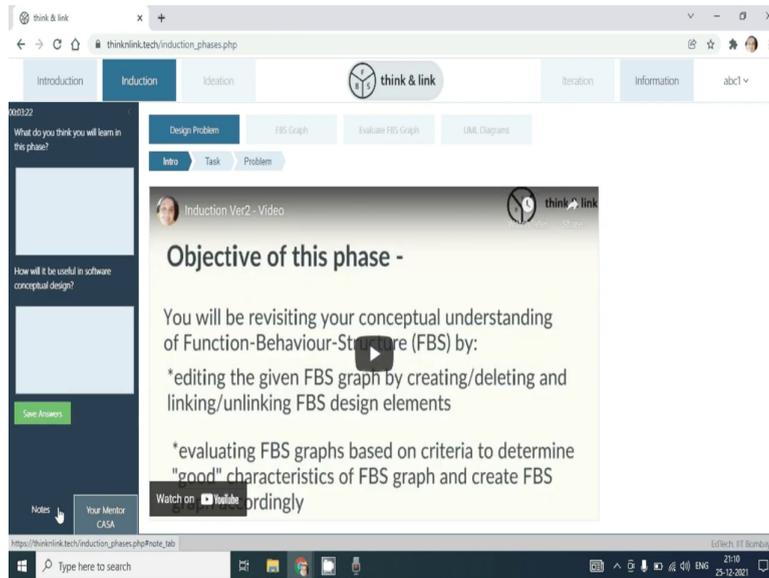


Once you complete all the answers and explore the FBS graph, the end phase will be visible. And as you end this phase, you will be moved to the next phase, which is the induction phase.

(Refer Slide Time: 02:50)

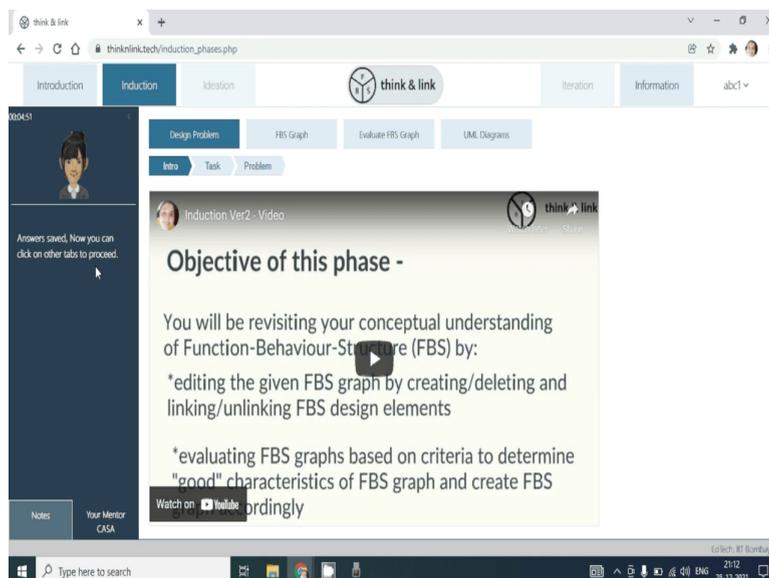


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In the induction phase similar to the introduction phase you are required to look at the video, find the objectives in the phase as well as how would you incorporate the learnings in the software conceptual design. You will have to complete these answers, and then the next tabs will be enabled.

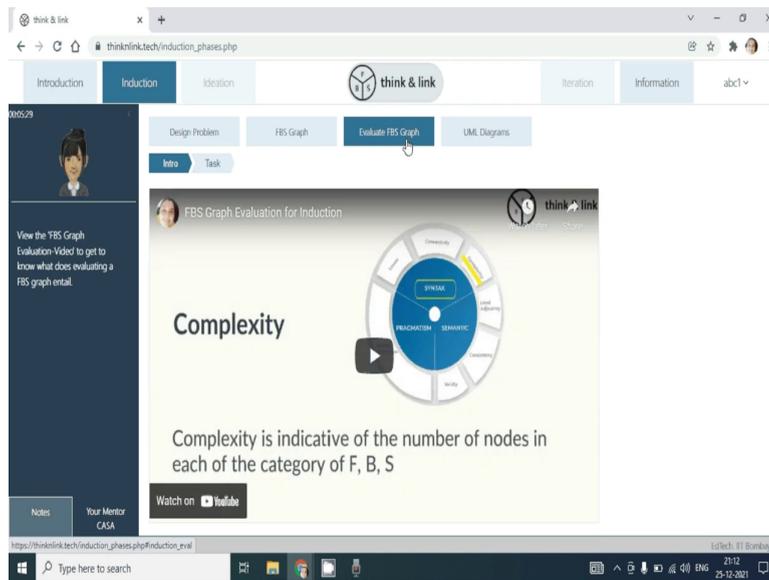
(Refer Slide Time: 03:23)



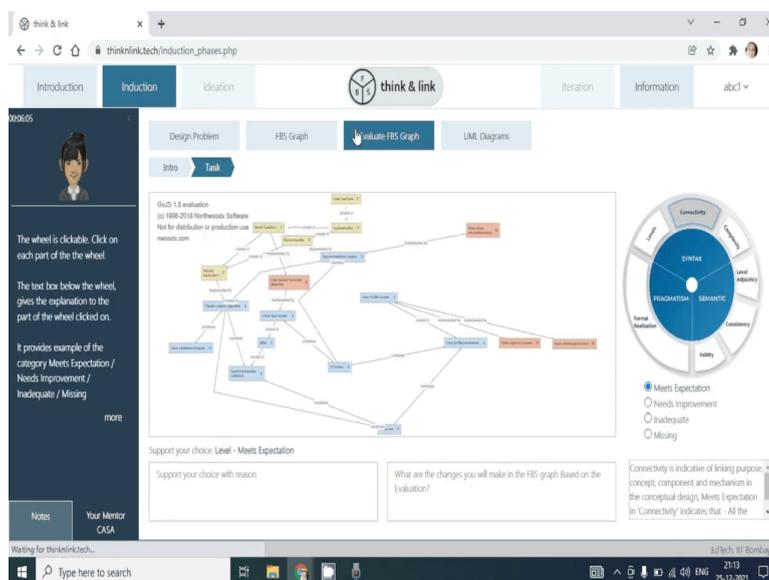
Once you save your answers you the other terms will be automatically enabled.



(Refer Slide Time: 04:00)



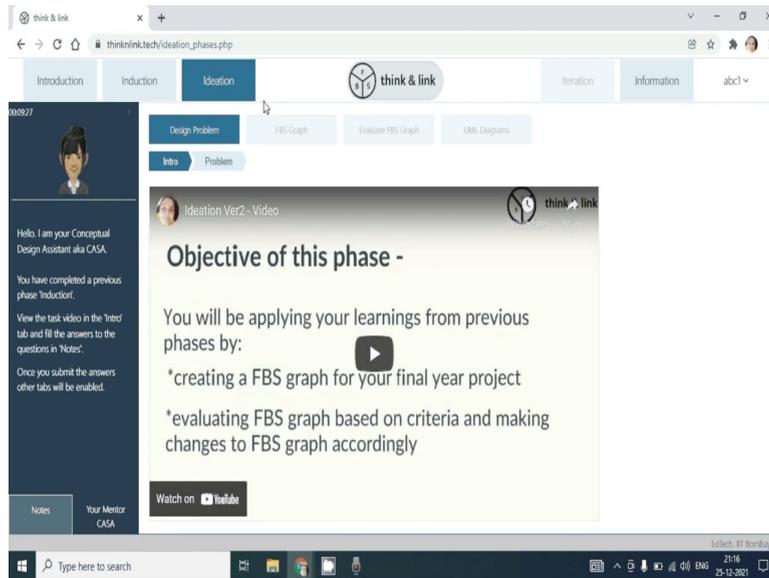
(Refer Slide Time: 04:04)



After having edited the graph, you can evaluate your FBS graph based on the evaluation parameters provided in this wheel. You will have to look at the evaluation parameters, assign corresponding categories and also, at the same time, reflect on why you are giving the particular rating. You can go back and edit the FBS graph and come back and evaluate the FBS graph.

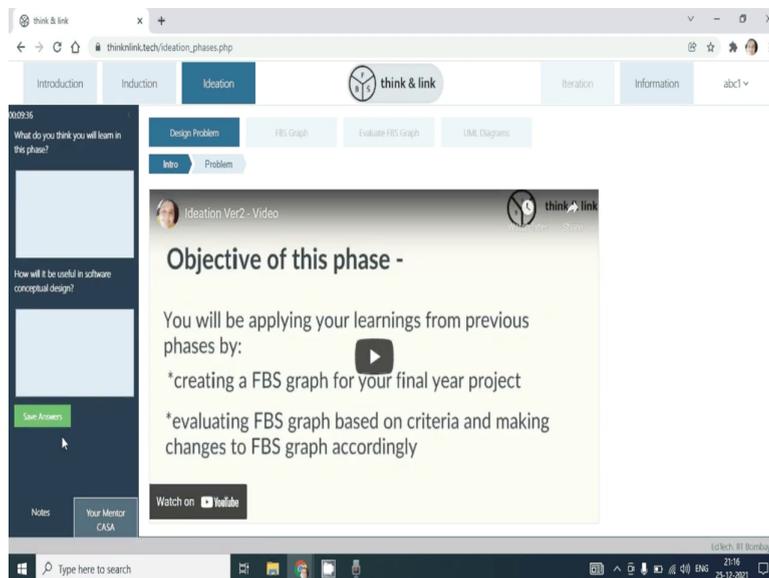
Once all the evaluation parameters have been completed, this phase will end. After you have edited the FBS graph and evaluated, this phase will end.

(Refer Slide Time: 04:58)



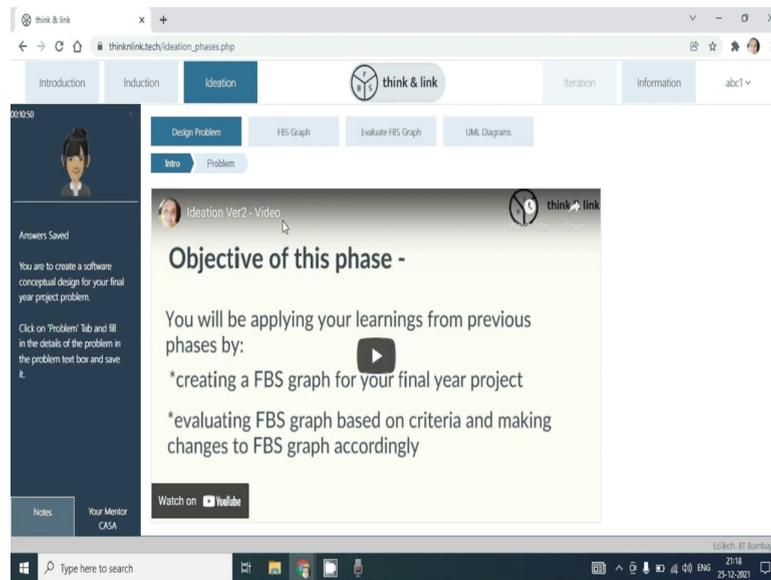
You are then taken to the third phase, which is the ideation phase.

(Refer Slide Time: 05:11)



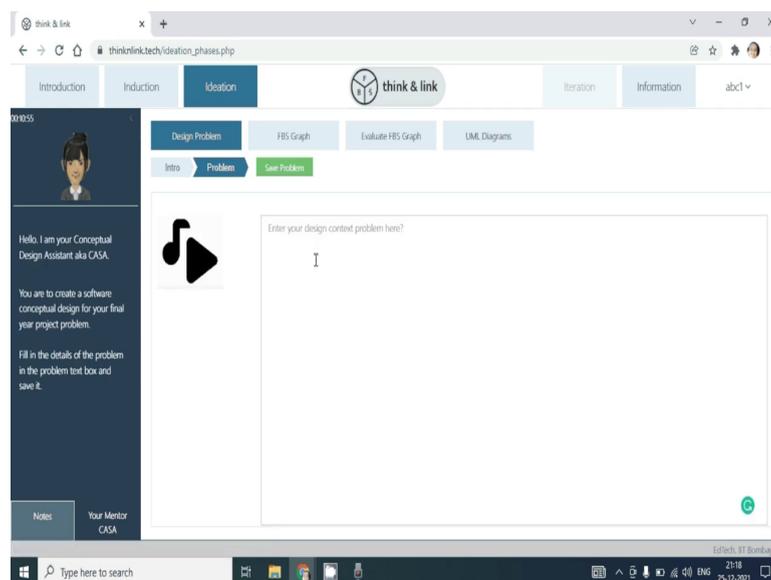
In this phase, similar to the earlier two phases, you will have to complete the planning questions that are provided.

(Refer Slide Time: 05:15)



The screenshot shows a web browser window with the URL `thinklink.tech/ideation_phases.php`. The page has a navigation bar with tabs for 'Introduction', 'Induction', 'Ideation', 'Iteration', and 'Information'. The 'Ideation' tab is active. Below the navigation bar, there are sub-tabs for 'Design Problem', 'FBS Graph', 'Evaluate FBS Graph', and 'UML Diagrams'. The 'Design Problem' sub-tab is selected, and a 'Problem' button is visible. The main content area features a video player titled 'Ideation Ver2 - Video' with the subtitle 'Objective of this phase -'. The video content includes the text: 'You will be applying your learnings from previous phases by: \*creating a FBS graph for your final year project \*evaluating FBS graph based on criteria and making changes to FBS graph accordingly'. A 'Watch on YouTube' button is located at the bottom of the video player. On the left side of the page, there is a sidebar with a user profile, the text 'Answers Saved', and instructions: 'You are to create a software conceptual design for your final year project problem. Click on "Problem" Tab and fill in the details of the problem in the problem text box and save it.' The Windows taskbar at the bottom shows the time as 2:18 on 25-12-2021.

(Refer Slide Time: 05:19)



The screenshot shows the same web browser window as the previous slide, but now the 'Save Problem' button is highlighted in green. The main content area has changed to a text input field with the placeholder text 'Enter your design context problem here?'. The sidebar on the left now displays a greeting: 'Hello, I am your Conceptual Design Assistant aka CASA. You are to create a software conceptual design for your final year project problem. Fill in the details of the problem in the problem text box and save it.' The Windows taskbar at the bottom shows the time as 2:18 on 25-12-2021.

In the last phase of think and link, you are required to write the design problem that you are interested to create a software conceptual design.

(Refer Slide Time: 05:29)

The screenshot shows a web browser window with the URL [thinklink.tech/ideation\\_phases.php](http://thinklink.tech/ideation_phases.php). The interface includes a navigation bar with tabs for 'Introduction', 'Induction', 'Ideation', 'Iteration', and 'Information'. The 'Ideation' tab is active, and a sub-menu shows 'Design Problem', 'FBS Graph', 'Evaluate FBS Graph', and 'UML Diagrams'. The 'FBS Graph' sub-tab is selected, displaying a slide titled 'Recap - What is a FBS graph?'. The slide content reads: 'FBS graph is a "thinking tool" to create and connect Function, Behaviour and Structure design elements in the conceptual design'. A sidebar on the left contains a user profile and a note: 'View the FBS Graph - Video to get to know what is a FBS graph. Also you could refer to the FBS graph in the Induction phase.' The bottom of the browser shows the Windows taskbar with the time 21:18 on 25-12-2021.

(Refer Slide Time: 05:32)

The screenshot shows the same web browser window, but now the 'Graph' editor is active. The 'Graph' sub-tab is selected, and a 'Save Graph' button is visible. The main workspace is empty, with a copyright notice: 'GnuD 1.8 evaluation (c) 1998-2018 Northwoods Software Not for distribution or production use northwoods.com'. On the right side, there is a 'Add Node' menu with options: 'Add Function', 'Add Structure', and 'Add Behaviour'. Below this is a 'Toggle Highlights' section with 'Similar Node', 'Similar Link', and 'Adjacent Node' options. The sidebar on the left contains a note: 'You can edit the FBS graph. You could populate the graph with the different nodes & links to create conceptual design. Use the information page and the FBS graph to identify the different types of the nodes. You could refer to the FBS graph that you created in the Induction phase.' The bottom of the browser shows the Windows taskbar with the time 21:18 on 25-12-2021.

Create a FBS graph from the scratch.

(Refer Slide Time: 05:37)

The screenshot shows a web browser window with the URL `thinklink.tech/ideation_phases.php`. The page has a navigation bar with tabs for 'Introduction', 'Induction', 'Ideation', 'Iteration', and 'Information'. Under the 'Ideation' tab, there are sub-tabs for 'Design Problem', 'FBS Graph', 'Evaluate FBS Graph', and 'UML Diagrams'. The 'Evaluate FBS Graph' sub-tab is active, showing a video player. The video title is 'FBS Graph Evaluation for Ideation' and the main content is a slide titled 'Complexity'. The slide features a circular diagram with 'SYNTAX' in the center, surrounded by 'SEMANTIC' and 'PRAGMATISM'. The text on the slide states: 'Complexity is indicative of the number of nodes in each of the category of F, B, S'. A 'Watch on YouTube' button is visible at the bottom of the video player.

(Refer Slide Time: 05:39)

The screenshot shows the same web application as above, but now in a task mode. The 'Task' button is highlighted. The main content area contains a text box with the following text: 'The wheel is clickable. Click on each part of the wheel. The text box below the wheel gives the explanation to the part of the wheel clicked on. It provides example of the category Meets Expectation / Needs Improvement / Inadequate / Missing'. Below this text box is a radio button selection for 'Support your choice: Level - Meets Expectation'. There are two text input fields: 'Support your choice with reason' and 'What are the changes you will make in the FBS graph Based on the Evaluation?'. On the right side, there is a circular diagram similar to the one in the previous slide, but with a legend below it: 'Meets Expectation' (selected), 'Needs Improvement', 'Inadequate', and 'Missing'. A tooltip for the 'Connectivity' segment of the wheel is visible, stating: 'Connectivity is indicative of linking purpose, concept, component and mechanism in the conceptual design. Meets Expectation in Connectivity indicates that - All the...'

Evaluate the FBS graph based on the evaluation parameters in the wheel and then complete this task of creating FBS graph for two problems.

Thank you.