Schools have reopened and it is time for students to plan an event for their class. This year Tejas and Jyoti have been given the responsibility to plan for the class day. The children are discussing about the event with Moz.

Tejas: Moz, We have to plan a four hour event. We planned four main activities. These are,
1. Tree planting - Vanamahotsav.
2. Tree planting and fun with Scratch.
3. Exercises and Asanas.
4. Fun with text processing.

Moz: Wow, tree planting! Why did you think of tree planting?
Jyoti: We need to plant more and more trees to fight pollution.
Tejas: Trees give us oxygen, shade, fruits, flowers, wood and many more things.
Moz: What does vanamahotsav mean?
Tejas: Vanamahotsav is a festival of tree planting and nurturing the trees.

1. Step Wise thinking

During Vanamahotsav
- Awareness is created in people about the importance of trees in our lives.
- Every year, during vanamahotsav new saplings of trees are planted in areas that do not have trees.
- Trees native to the region are planted. These can adapt easily to local regions and have a high survival rate. They can support the birds, insects and animals of the local eco-system.
Jyoti: Now is the right time to plant trees as the rains have just begun.
Moz: Correct. Very good activity. So what should we do next?

Tejas: Now we have to plan for each activity and list the main steps for each activity.
Moz: Good. What are the main steps for “Tree planting activity”?
Tejas: First, we get some saplings. Then we go to a place where we can plant the saplings.
Jyoti: Then, plant the saplings and water them regularly. If it starts raining regularly, we need not water them.
Moz: Good. So you have three main steps. What are they?

Activity 1: Tree planting - Vanamahotsav
   Step 1: Plan for planting of saplings.
   Step 2: Plant the saplings.
   Step 3: Take care of the saplings.

Moz: What next?
Tejas: We have to list the detailed steps.
Moz: Good. Do you know where you can plant the saplings?
Jyoti: The hill near the school is barren. We plan to plant the saplings there.
Moz: How many saplings will be planted?
Tejas: There are 40 students, 2 teachers and a principal.
Jyoti: We need a total of 43 saplings.

Moz: Did you decide the type of saplings that you are going to plant?
Tejas: Some medicinal plants like “Neem”. My grandmother says that the breeze from neem tree is very good for health.

Moz: I know of one tree called Laxmi Taru or Sirouba. This tree consumes highest amount of Carbon dioxide and purifies the environment. It can grow on barren land and reduces or stops the soil erosion. It requires very little water to grow.
Jyoti: We can also plant trees that give shade like Banyan as well as fruit bearing trees like Mango, Tamarind and Chikoo.
Tejas: After deciding the sapling that we want, we have to give the list to the gardener. The gardener will bring the saplings.
Moz: Good.

Moz: How do you plant the saplings?
Jyoti: We need to dig the soil and then plant the sapling.
Tejas: Our teacher said that the ground will be prepared by our gardeners.

Detailed steps are:
Main Step 1: Plan for planting of saplings.

Step 1.1: Decide the location to plant the saplings.

Step 1.2: Obtain permission to plant the saplings.

Step 1.3: Calculate the number of saplings that will be required.

Step 1.4: List the type of saplings that you require.

Step 1.5: Inform the gardener about the number of saplings and type of saplings that will be planted.

Step 1.6: Request the school gardeners to prepare the ground to plant the saplings.
Moz: Now, how do you plant the saplings?
Tejas: Let us work in groups of two students each.
Moz: Why?
Tejas: It is fun and we can help each other while planting.
Moz: That is a good idea.

Jyoti: Next each student plants the sapling.
Moz: Correct. You have to detail out this step too.
Jyoti: Oh! Yes. We put the roots of the plant in the hole made by the gardener and cover it with mud.
Moz: So do you need something for this step?
Jyoti: Yes. We need a shovel or a spade.
Moz: Good thinking.

Detailed steps are:
Main Step 2: Plant the saplings.

Step 2.1: Make groups of two students each.

Step 2.2: Collect the tools to be used for planting.

Step 2.3: Plant the saplings.

Moz: After the saplings are planted what do you do?
Tejas: We need to water them. So we need to get a few water cans.
Moz: Very good. You have made a very detailed plan.
Tejas: The last step and important one is to water them regularly. The teacher said that the gardener will take care of it, till we get regular rains.

Main Step 3: Take care of the plants.
Step 3.1: Arrange for water cans and water.
Step 3.2: Water the plants regularly.
Moz: Can you demonstrate the tree planting activity using Scratch?
Tejas: Yes. We can.

Tejas and Jyoti first plan the program and then convert it into instructions in scratch.

Information:
There are two students.
Two saplings to plant.
A hill to plant the saplings.

Main steps for scratch program “Two students planting saplings”

Step 1: Prepare for planting.
Step 2: Plant the saplings.
Step 3: Take care of the saplings.

Tejas: We need costumes for each student like sitting to plant, digging etc.
Jyoti: Let us do pencil drawings using for each action in Paint.
Tejas: Oh! Yes. That will be a good idea.

Jyoti: Will you please draw the background. You are good at drawing scenery.
Tejas: Thanks. I will paint the background. We will need two backgrounds. One to show the mud strewn around and another one with the sapling.
Moz: Are these backgrounds for the actions of one student?
Tejas: Yes. We will need two more backgrounds for the second student.

Moz: Very good. Both of you have planned the activity very well.
Tejas and Jyoti then plan the program on paper.
Tejas: We first have to import the background, sprites and costumes.

**Import background.**
Import the sprites and the costumes.
Position Sprite 1 and Sprite 2 on the hill.

Jyoti: Now let us first write the detailed steps for StudentSprite1, StudentSprite2 and background.
Tejas: I will be student 1 and you are student 2. Let us act out the sequence and write the detailed steps.

Wait Tejas.
Let me hand you the tools.

Tejas (with a smile says): That means we have to insert “wait __ secs” wherever necessary.
Moz: Correct. Coordination between Sprites is important.
Tejas and Jyoti write the detailed steps for each action

### Detailed steps for - Step 1: Prepare for planting

<table>
<thead>
<tr>
<th>Student 1</th>
<th>Student 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start the program.</td>
<td>Start the program.</td>
</tr>
<tr>
<td>Say &quot;Let us start&quot;, for 1 sec.</td>
<td>Wait 1 sec.</td>
</tr>
<tr>
<td></td>
<td>Change the costume to holding tools and sapling. Say “I will hold the saplings and the tools” for 1 sec.</td>
</tr>
<tr>
<td>Wait 1 sec.</td>
<td></td>
</tr>
<tr>
<td>Change costume to sitting position.</td>
<td>Wait 1 sec.</td>
</tr>
<tr>
<td>Say “Please give me the tools” for 1 sec.</td>
<td></td>
</tr>
<tr>
<td>Change costume to stretching hand.</td>
<td></td>
</tr>
<tr>
<td>Say “Thanks” for 1 sec.</td>
<td></td>
</tr>
<tr>
<td>Change costume to digging.</td>
<td></td>
</tr>
<tr>
<td>Say “There are earth worms in the soil!”, for 1 sec.</td>
<td></td>
</tr>
<tr>
<td>Wait 1 sec.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Background</strong></td>
<td></td>
</tr>
<tr>
<td>Start the program.</td>
<td></td>
</tr>
<tr>
<td>Switch to background with the hill.</td>
<td></td>
</tr>
<tr>
<td>Wait 6 secs.</td>
<td></td>
</tr>
<tr>
<td>Change to background costume with the mud dug up.</td>
<td></td>
</tr>
</tbody>
</table>
Scratch block for student 1 sprite

```plaintext
when [ ] clicked
say Let us start for 1 sec
wait 2 secs
switch to costume: arm-up
say Please give me the tools, for 1 sec
switch to costume: std-stretch
say Thanks for 1 sec
switch to costume: std-dig
say There are earth worms in the soil for 1 sec
switch to costume: std-worm
wait 2 secs
```

Scratch block for student 2 sprite

```plaintext
when [ ] clicked
wait 5 secs
switch to costume: std-hand
say I will hold the saplings and tools, for 1 sec
wait 5 secs
switch to costume: std-grow-tool
wait 2 secs
say They are good for the plants. The roots can easily reach down, for 2 sec
```

Scratch block for background

```plaintext
when [ ] clicked
switch to background hill
wait 3 secs
switch to background dug-mud
```

### Detailed steps for - Step 2: Plant the saplings

<table>
<thead>
<tr>
<th>Student 1</th>
<th>Student 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change costume to stretching the hand. Say &quot;Please give me the Neem sapling&quot;, for 1 sec.</td>
<td>Wait 1 sec. Change costume to giving sapling.</td>
</tr>
<tr>
<td>Wait 1 sec. Change costume to planting the sapling.</td>
<td>Say &quot;Here is the Neem sapling&quot;, for 1 sec.</td>
</tr>
</tbody>
</table>

**Background**
- wait 2 secs.
- Change costume to background with the planted sapling.
**Detailed steps for - Step 3: Take care of the saplings**

<table>
<thead>
<tr>
<th>Student 1</th>
<th>Student 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Say “I will water the sapling now”, 1 sec.</td>
<td>Wait 1 sec.</td>
</tr>
<tr>
<td>Change costume to watering the sapling.</td>
<td>Say “Now I will plant Laxmi taru sapling”, for 1 sec.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Background</th>
</tr>
</thead>
<tbody>
<tr>
<td>wait 2 secs.</td>
</tr>
<tr>
<td>Change costume to background with sapling.</td>
</tr>
</tbody>
</table>
Jyoti: When it is the second student’s turn to plant, we can repeat the above blocks for student 1 and student 2 Sprite, just by reversing the roles.

Moz: Correct. Are there any steps where you can change the sequence?

Tejas: either of the two students can start planting the sapling.

Jyoti: Both of them can also sit together, keep the tools in between and plant the saplings at the same time.

Moz: Correct. For some activities the sequence does not matter, while for other the sequence matter. Now, enter the programs in Scratch and execute the animation.

Jyoti: For “Fun with Scratch” activity, let us ask the students to make the sprite draw an elephant, a joker, a butterfly or a dragon, step by step.

Moz: That will be interesting. Are you giving any hints to help them complete the activity?

Tejas: Yes. We will give hints.

“Fun with Scratch “ activity prepared by Tejas and Jyoti can be found on page number: 21 as a group activity.
Moz: Can you list some of the important precautions while using a computer.
Tejas and Jyoti: Yes. We can.

- Do not work for more than half an hour at a time.
- If we are not using the mouse or keyboard then keep the hands relaxed.
- Keep your wrists straight while you are typing. Do not bend your wrists up, down or to the sides.
- Maintain a good posture to avoid pains and aches in the body.
- Do some stretching exercises and asanas for shoulders, wrists, legs and back.
- Exercise regularly to keep fit.
Moz: Are you blinking regularly?
Tejas: Yes. And we also take breaks while using computers.

> Minimize eye strain:
  - Blinking and looking away from the monitor need to be done frequently.
  - Take eye-breaks every 10 minutes, by looking away from the screen and into the distance.
  - Remember to clean your screen. If you wear glasses, clean them also.
  - If you cannot read the text on the screen easily, increase the font size of your text, instead of going closer to the monitor.
  - Do the eye exercises regularly to avoid strain on the eyes and to have good eyesight.

Moz: Now, what is your plan for “Exercises and Asanas” activity?
Jyoti: Let us divide the class into groups and ask each group to demonstrate one asana.

“Exercises and Asanas” activity prepared by Tejas and Jyoti can be found on page number: 21 as group activity (c).

4. Fun with Text processing

Moz: Good. Now you have one more “Short story competition” is mentioned on page number 2 activity that needs to be detail.
Tejas: Let us write about the history of computers in the word processor.
Jyoti: The students can then format the document.
Moz: What are the guidelines for formatting?
Tejas: We will list them down so that we can give these guidelines to the students.
Choose a font which is clear and easy to read.
If you mix different types of fonts in a sentence, then it will be difficult to read the sentence.
Larger fonts are used for text which is important and to capture the attention of the reader.
Whenever you want to highlight or emphasize a word or sentence:
- Use either bold or italics style of the font.
- Use bold and italics together only if necessary.
- A different colour can be used for a word or sentence.
- Underline can also be used to draw attention.
- Remember not to use too much of bold, italics or colour in your story, essay or any document that you are preparing.

Moz: That is right. What about the number of fonts usage?
Jyoti: If there are too many font changes, then it is not easy to read.
Moz: Correct.

Jyoti and Tejas prepare an activity for “Fun with Text Processing” which is given as a worksheet on page number: 18.

Moz: Excellent. You have learned to do things systematically. Did you observe that you have planned the event step by step.
Jyoti: Yes. We decided the main activities first. Then we detailed each activity.
Tejas: Thanks Moz for helping us to plan the event. We would like to explore more of Scratch.
Moz: Sure, we will start tomorrow. In the next lesson we will discuss problem solving with logical thinking which will help you in writing programs for games, interactive greeting cards, etc., in Scratch.
Chin Chinaki...

Lesson Outcome
After you have studied this lesson, you will be able to:
- Recall what was learnt in level III, such as step-wise thinking, Scratch programs, Asanas and text formatting.
1. State whether True or False.

a. Dividing tasks to smaller steps makes the task easier to do. **True/False**

b. Take eye-breaks every 10 minutes by looking away from the screen into the distance. **True/False**

c. `when [clicked]` command can be used to start a program in Scratch. **True/False**

d. To highlight or emphasize a word or sentence we can use bold style. **True/False**

e. A computer can only work using step by step instructions from us. **True/False**

2. Various steps in digestion of food are given below. Write numbers from 1 to 7 next to the sentences, as per the steps in digestion process.

   **Step 1** You take a bite of food.

   **Step 2** Water is removed from the remaining food in this larger intestine.

   **Step 3** Your teeth tear, chop and grind the food.

   **Step 4** Food reaches the stomach. It is mixed with digestive juices and churned.
3. Just like you draw step by step, also you can colour step by step. Show the missing steps in the paintings given below. Write a program in scratch to show the step by step colouring.

4. Circle True, if the statement is correct and False, if the statement is not correct.
   i. Increasing the text size on the computer screen will strain your eyes. True/False
   ii. You can work on a computer without breaks. True/False
   iii. Put up a poster in the computer-area to remind everyone to do stretches. True/False
iv. The children are sharing the computer and sharing is a good habit. True/False

iv. The boy is sitting in a low chair to work on the computer and this is the correct posture. True/False

5. Help Tejas find the two exercises that are good for his shoulders.
   a. Hasta Utthanasana
   b. Skandha Chakra
   c. Manibandha chakra

6. Bittu wants to do exercises for his eyes. Which of the following should he do?
   a) Palming
   b) Rotational viewing
   c) Blinking
   d) Be a cat

7. Following pictures show how rice (or paddy) is grown in Timbaktu. List the three main steps and then list out the detailed sequence of each main step in the blanks given below.

(Not yet given.)
6. Format the following document choosing a font type and colour. One of the paragraphs is done for you.

**History of Computers**

Since stone age people needed to count and calculate. Stone age men used stones for simple counting and calculations. Then *abacus* was invented which was made of strings and beads. Using these beads people performed calculations.

Then came various devices like the *antikythera mechanism* to find the motion and position of starts and planets, then the logs, then there were *mechanical computers* and so on. *Computer* was also invented as a *calculating device.*

History of modern computers dates back to 1945. We can say the present computer has crossed 5 generations from 1945 to this date. The classification of generations has been done based on technology, speed, storage, reliability and cost.

The first generation computers were named ‘Eniac,’ ‘Edvac,’ and ‘Univac’. They were huge in size and very costly to maintain.

The second generation computers developed after 1955 had more computing power, were smaller in size, easier to maintain and were more affordable than the previous generation.

The third generation of computers were developed in the 1960’s which had increased speed and efficiency.

The fourth generation computers were developed in the 1970’s and had tremendous computing capabilities.

The fifth generation computers were developed in 1980’s and used the concept of Artificial intelligence.

The different types of fifth generation computers are Desktop, notebook or laptop, palmtop, server, Mainframe and Super Computer.
Open Educational suite GCompris and play the following games:

1. Invisible Maze: Help Tux get out of this maze. Use the keyboard arrows to move Tux up to the door. You can switch between invisible and visible modes using the spacebar. Visible mode just gives you an indication of your position, like a map. You cannot move Tux in visible mode.

2. Memory game Flash cards: You can see some cards, but you can’t see what’s on the other side of them. Each card is hiding a division sum, or the answer to it. You need to find the two parts of the operation, and bring them together again. Click on a card to see what number it is hiding, and then try to find the other card that goes with it, to make a whole operation. You’re doing the job of the equals sign, and the numbers need you to put them together and make a proper equality. When you do that, both those cards disappear! When you’ve made them all disappear, you’ve won the game!
3. gbrainy: This is a brain teaser game and allows you to play games related to memory, calculation and logic. To play this game, follow these steps:

Applications → Games → gbrainy

Welcome to gbrainy 0.61

gbrainy is a brain teaser game and trainer to have fun and to keep your brain trained. It includes:

- Logic puzzles. Designed to challenge your reasoning and thinking skills.

- Mental calculation. Based on arithmetical operations that test your mental calculation abilities.

- Memory trainers. To prove and enhance your short term memory.

Use the Settings to adjust the difficulty level of the game.

Answer: 

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**Group activity:**

a. Famous 5 on a Vacation: Form groups of 5 children. Imagine that you are on a vacation with your friends (the group members). Example: Taj Mahal, Munnar hills, Goa beaches, or Timbaktu. When you are in such a place what would you talk about? Act out the conversation. Write down the conversation. Write a Scratch program with the place as the background and your conversation to the Sprite. Remember to first write the detailed steps for each sprite and the background. Then covert it into a Scratch program. 

Hint: Each member of the group is represented by a sprite. Have fun using animals, birds, insects as sprites. Use Looks, Control, Motion and Sound blocks.
b. Anything is easy to draw! Draw step by step:

Form groups of 3 children each. Each group selects one of the following drawing which can be drawn step by step:

1. An elephant
2. A butterfly
3. A dragon
4. A joker

Write a program in Scratch to demonstrate step by step drawing of the selected drawing.

Hint: Draw a costume for each step using paint. Use instructions from Looks and Control and Sound blocks. Some instructions that can be used are:

Example: Costumes to draw a joker step by step.

[Image of costumes]

c. Choose and demo: Divide the class into 8 equal groups. On small sheets of paper write the names of the exercises and asanas. Fold these papers and put them in a bowl. A member of the group picks up one of the folded papers from the bowl. The group then demonstrates the exercise or asana that is written on the paper.

1. Kehuni naman.
2. Wrist joint rotation.
4. Akarna dhanurasana.
5. Samakonasana.
6. Be a cat.
7. Rotational viewing.
8. Palming.

Explore!

1. Find out about Carpal Tunnel Syndrome. What are its causes and how can it be avoided?
2. Find out how you can use your own pictures as a Sprite in Scratch.
The first lesson of Level IV is a revision chapter. It is important that students have a clear understanding of the concepts covered in Level III before they start learning new topics. You can begin the class by asking the students how they spent their vacation. Some students would mention that they visited their relatives or traveled to a new place. You can ask them how they planned the trip and list the different steps involved in the activity. Summarize the main and detailed steps. Draw students’ attention to reasoning involved in taking decision for each step. Mention that they will learn more thinking skills this year.

You can ask the students to write a short paragraph on activities done in the vacation, using the text editor. Encourage them to use the different formatting options to make the paragraph easy to read.

Revise the various exercises they learnt to keep fit while using computers. Ask the students to demonstrate these in the class. You can play a game where each row in the classroom represents one group. Ask one group to mention the name of the asana and the second group demonstrates it. You can also reverse the format, wherein one group shows the exercise and other group mentions its name. Make the game more challenging by asking a few random questions open to all the groups such as ‘Demonstrate the correct posture while using the computer.’ End the session by listing the different asanas for neck, back, eyes and shoulders.

Ask the students to mention the various activities that they did with computers. Students would mention about Scratch and the different projects they wrote it in it. Let one student start this application and run a short program such as drawing a square. Another student can show how to control the given project by using the different control commands. Revise the different commands of Scratch covered in Level III. Tell the students that they will learn new commands this year that will allow them to write interesting projects using Scratch.

End the class by summarizing the different topics covered in Level III. Allow the students to have adequate hands-on practice by giving them appropriate exercises, especially in Scratch.

Further Reading:
http://school.discoveryeducation.com/brainboosters/