Appendix

VECITS

(Vector Intelligent Tutoring System)

User Manual
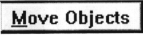
Brief Description

Welcome to VECITS. In this manual user will learn

1) How to use the VECITS.

2) Types of Message box and Hypertext.

3) Button to use.

Before we go further, I would like to introduce types of button, which are used in VECITS.

Types of Button.

|		
Next	To continue the system	
Exit	To exit the system	
		To go to the first page of the system
		To go to the previous page.
		To go to the next page.
		To go to the last page of the system.
Done	To show the direction of vector after entering the coordinates.	
Hint	To get a hint before answering the question.	
Note	To get a note from related page.	
Move Objects	To show the animation object.	

show	To show animation of line of direction for vector calculation.
Tutor	To show the hypertext of what user have to do in the steps.
Notes	Allow user to go to the list of topics, which is provided in the system.
Tutorial	Allow user jump to tutorial session.
Show Graph	To show the graph after user finish answers the question.

Table 1: List of Buttons

2. Main Menu

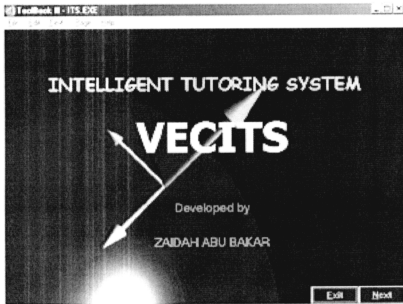Initially, when user use the VECITS, Figure 1 will be showed.

Figure 1: Main menu of VECITS

In this screen, user will provided 2 types of button.

Figure 2: Exit and Next Button

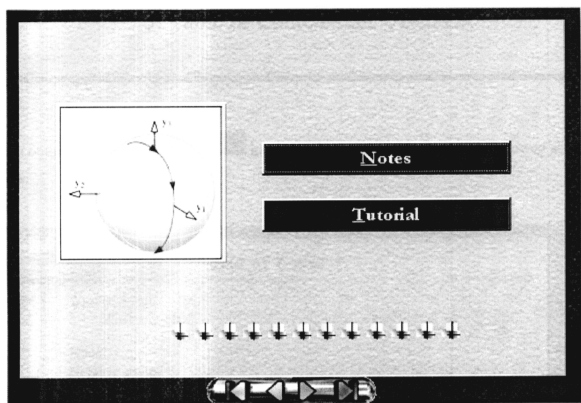When Button **Next** is pressed, Figure 3 will be showed.

Figure 3: Selection Menu

There are two types of button showed which allow user to choose. When user press a

 button, screen as shown in Figure 5 will appear. But for

 button, user may skip to the problem solving session without going through the notes session.

At the bottom of the screen, there are 4 buttons which shown in Figure 4 below. It is called navigation button.

Figure 4: Navigation Button

3. Table of Contents for VECITS

When button **Notes** has been chosen, list of topics will be showed as Figure 5 below.

Table of Content

What is Vector
    What is Scalar
    Modulus of Vector
Equal Vector
Negative Vector
Vector Multiplication
    Multiplication of vector by a scalar
    Multiplication of two scalar vector, a and b
Vector Addition
    Vector Addition - Geometry
    Vector Addition - Algebra
      Algebraic Method of adding vector
    Example
    Law of vector addition
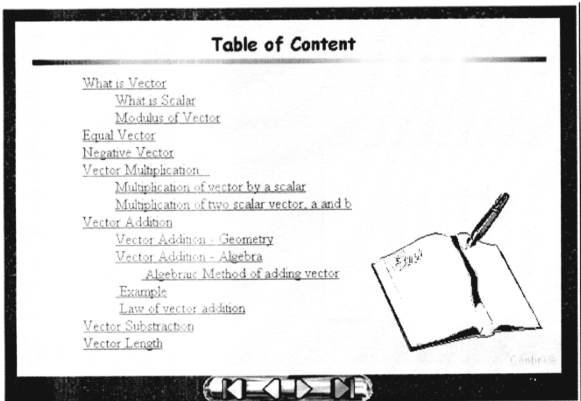Vector Substraction
Vector Length

Figure 5: List of Contents in VECITS

In this page, user may select appropriate topics, which is provided. Each topic is provided with hypertext features, which allow users to skip to the particular topics.

4. Notes Section

Figure below shows the first page of notes in VECITS. This page provides hypertext features for the words 'magnitude' and 'direction'.
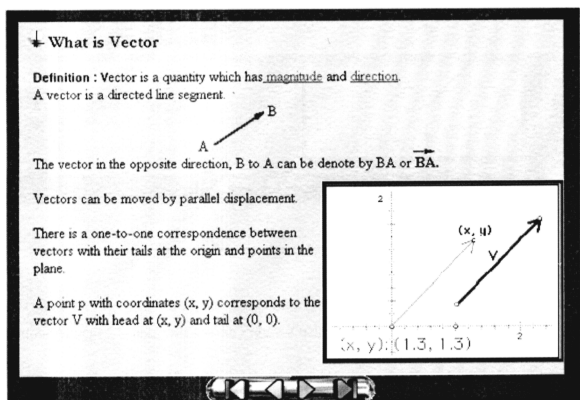

Figure 6: First note in VECITS

When 'magnitude' is clicked, a pop-up screen explaining the meaning of 'magnitude' will appear. It is shown in Figure 7 below.
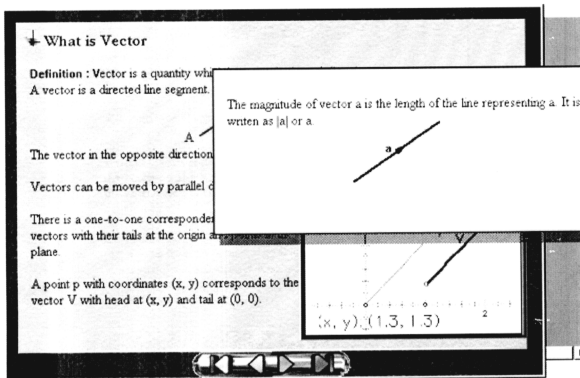
↓ What is Vector

Definition : Vector is a quantity wh
A vector is a directed line segment.

The magnitude of vector a is the length of the line representing a. It is
writen as |a| or a.

A

The vector in the opposite direction

Vectors can be moved by parallel

There is a one-to-one corresponden
vectors with their tails at the origin a
plane.

A point p with coordinates (x, y) corresponds to the
vector V with head at (x, y) and tail at (0, 0).

(x, y) (1.3, 1.3)

Figure 7: Pop-up screen for word 'magnitude'

It is same for the word 'direction'. Users may read through the note page by page using navigation button. At page 11, user will see the Figure 8 below.

Figure 8: Button for Animation

show button indicates that, it shows an animation of line of direction of vector calculation. User will get the figure as shown in Figure 9 below.

↓ **Vector Addition**

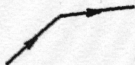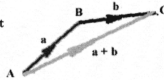There are two types of vector addition.

   i) Geometry
   ii) Algebra

Vector Addition- Geometry

The addition of vectors is defined as follows.

> **'If the sides AB and BC of triangle ABC represent the vectors a and b, the third side AC represents the vector sum, or resultant, of a and b and is denoted by a + b.''** [show]

Explanation:

   a and **b** have directions that go in one sense round the triangle (clockwise in the diagram) and that their resultant, **a + b**, has a direction in the opposite sense (anticlockwise in the diagram). This is called the PARALLELOGRAM law of addition.

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Figure 9: Animation for Vector Direction

At page 25, user can do their own exercise by entering the value of s by multiplying it with 2 and 4 in the field provided. It is shown in the Figure 10 below.

Figure 10: Sample Exercise

System will detect either the answer is correct or not. If the answer is correct, a small pop-up screen will appear to acknowledge user. If the answer is incorrect, a small pop-up window will appear to tell the answer is incorrect. There are shown in Figure 11 and Figure 12 below.

Figure 11: Correct Feedback
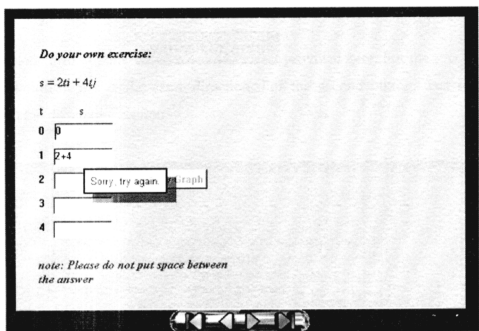
Figure 12: Incorrect Feedback

After the entire field is filled, **Show Graph** button will be activated. It allows user to see the animation of graph, which is related to the value, filled in the answer's field. Figure 13 shows the complete answer with the graph.
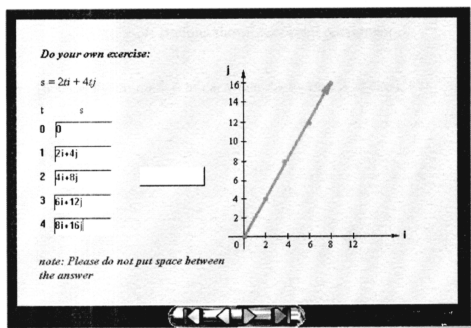
Figure 13: Full answer with graph

At page 26, Figure 14, note denotes that the movement of object either in the same direction or in the opposite direction. Two buttons **Move Objects** provided here. For the first button, user may see the animation of car in the same direction. For the second button, user may see the animation of car in the different direction.
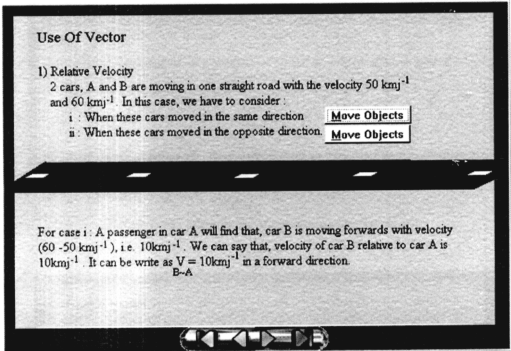
Figure 14: Buttons shows for object movement

Figure 15 and Figure 16 show the animation of car when this button is clicked.

Figure 15: Objects move in the same direction

Figure 16: Objects move in the different direction

At page 32 , users are allow to fill the coordinate for U_A W_A and U_B W_B . It is shows in Figure 17 below.
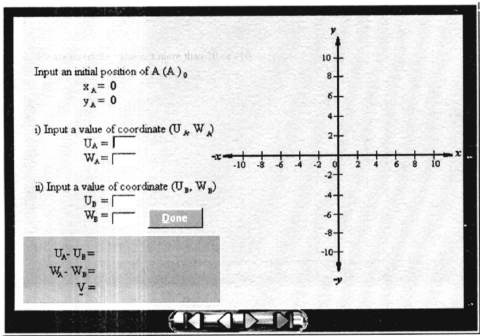
Figure 17: Coordinates for velocity calculation

After the coordinate has been entered, user may click button **Done** and 3 small ellipse will appear together with the 3 arrows of direction. The blue box at left button of the screen will show the value of velocity from the coordinate entered. Figure 18 shows the screen when all of this transaction is finished.
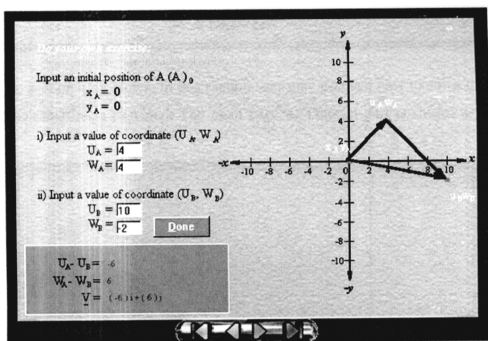
Figure 18: Coordinates with the direction of vector and velocity calculation

5. Tutorial

Tutorial part is the section after Notes. In this section user may practice how to solve the problem given with the hints and helps provided. The main page of Tutorial part is shown as Figure 19 below.
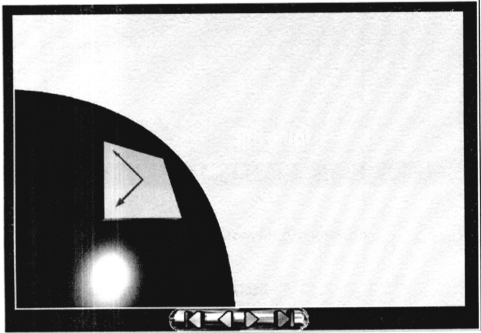
Figure 19 : First page in tutorial session
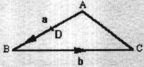
Users may continue the page by click the button and first question will appear as shown in the Figure 20 below.

Figure 20: Screen for first question

In this page, users may enter answer in the field provided.

 Button use to get hint before answering the question and as shown in figure below.
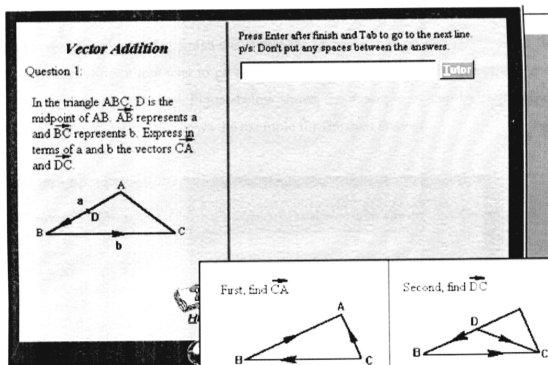
Figure 21: pop-up guideline for Hint button

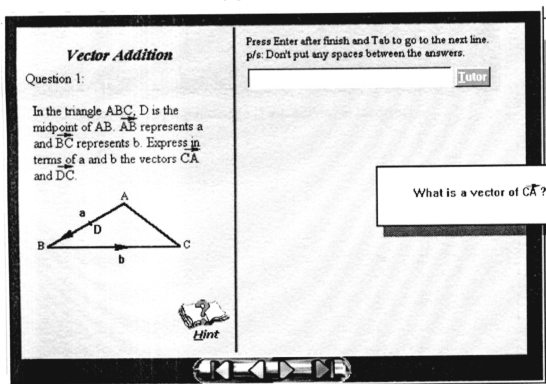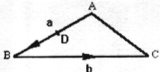When button **Tutor** is clicked, user may get the help as shown in Figure 22 below.

Figure 22: Pop-up guideline for Tutor Button

User has to press 'enter' key after finish answering the question at each step (line). If the answer is incorrect, system will not allow user to go to the next step. If the answer is correct user may go to the next step by pressing 'tab' key. Figure below shows the example of step-by-step answers with incorrect feedback and Figure 24 shows the example for finished answer.
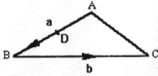
Figure 22: Pop-up message if the answer is incorrect.

Figure 23: Pop-up message if the answer is correct and finished.

For the rest of the questions, user may use the same techniques.