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I'm Miss Froila Valency Rodrigues, Assistant professor, Department of electronics, Dnyanprassarak Mandal's College and Research Center, Assagao-Bardez Goa. The modulel'll be explaining today is flowcharts and algorithms-2 coming under Unit 1, that is, flowcharts and algorithms. This is model number 02. This is the outline of the presentation. Will see the examples on writing algorithms and drawing flowcharts. So coming to the learning outcomes, in the end of this presentation, the student will be able to write algorithms and draw flowcharts. So what is a flowchart? A flowchart is a pictorial representation of steps in order to solve a particular problem. And an algorithm is a sequence of steps or procedure to solve a particular problem. These are the symbols used in order to construct a flowchart. So we have the Oval symbol which marks the beginning and end of the flow chart. So here we have the start and in the end of the flowchart we have the stop. Next we have the parallelogram. The parallelogram is used in order to input variables from the user as well as to display

any particular output to the user. Next we have the rectangle. A rectangle is used to define variables as well as For process statements. Next is the diamond shape. The diamond shape symbol is used for conditions. Suppose you have a condition, you have to put that condition inside this diamond shaped symbol. Next, you have the arrow, arrow marks the upward, downward, left and right flow of the flowchart. Circle is a connector also called as the page connector. It is used to connect different flowcharts together and last we have the looping. Looping is used for loops, while and do-while loops. Next we look at the example one, that is to write an algorithm and to draw the flowchart to find the sum of two numbers. So now in order to find the sum of two numbers, we require two variables. So here we have operand number one, an operand number 2. So operand one is a Operand 2 is b and also require we require another variable to store the answer. So in total we require three variables. Variables are nothing but handles, which I've used to store the values. So here we

have integers a,b and c. So let's get started with the algorithm.

Step number one that they start, step #2 is define the variables

that is a,b and c, step. #3 is input the variables a and b, step #4 is assign the variable c=a+b that is the sum of the two operands. Then we have step #5 to display the output c and the step #6 is to stop. So now let's look at the flowchart. The flow chart comprises of the start. In the oval shape symbol, next we have to define the variables a,b and c which is put in a rectangle box. Next we have a parallelogram in which we put the inputs a and b which we are going to input from the user. Then the next is the rectangular box in which we evaluate the expression, that is C = a+b and the next step is whatever we're getting as the answer that is, c.we are displaying it to the user so that it is display c which is again put in a parallelogram shaped box and finally we terminate the flowchart by using stop. The next example, example two is to write an algorithm and flow chart to convert temperature from Celsius to Fahrenheit. So here we have two variables. One is c that is the temperature in Celsius and the 2nd is f which is the temperature in Fahrenheit. So over here we need to convert temperature that is from Celsius to Fahrenheit. So let's get started with the algorithm step number one is to

start. Step #2 is defined the two variables that is, f and c, step number three years we have to input the temperature in Celsius from the user, step #4 is evaluate the expression that is F = (9/5 * C) + 32. So this expression converts the temperature from Celsius to Fahrenheit, and equates it to Fahrenheit. Step #5 display the temperature in Fahrenheit that is F to the user. Step #6 is to stop. So now let's look at the flowchart. So we have first the start. Next we have to define the two variables that is F and C in the rectangle box. Next is the parallelogram in which we input the value of the temperature in Celsius in parallelogram. Next we have to solve the expression that is F = 9 by 5 * C +32 and the next is to display this temperature in Fahrenheit to the user. And the last step is to stop. So this is our example two. Let's move forward to example #3 which is writing an algorithm on a flowchart to find the area and perimeter of the square. So here we have three variables, the first is area, second is perimeter and third is length, So A for area P for Perimeter, and L for length.So let's get started with the algorithm. Step number one is to start, step #2 is to define the three variables, that is A, P & L, step. #3 is to input the variable L step #4 we evaluate the area and the perimeter as

required. Step #5 is to display the area and the perimeter and step #6 is to stop. So looking at the flowchart first we have the Start, Second we have to define variables A comma B comma L. Next we imput L from the user that is the length. Next we evaluate the area and perimiter by using the formulas L into A and the perimetre as four into L and display the area and perimeter to the user.And finally we stop. Example #4 is to write an algorithm and draw the flowchart to find the smallest of two numbers. So here will require 2 numbers, that is number one and number 2. So we give the names number for num one and num 2 for number 2. So let's get started with the algorithm. So step number one is start. Step, #2 is number one and number 2 as variables step #3 is take the input from the user, that is number one and number 2. Next we have to compare the two numbers. So here we need to find the smallest number. So, the condition here is num 1 less than num2. If the condition is true, display smallest is num one else display smallest is num 2 to an step #5 is stop. Let's look at the flowchart. Flowchart is start. Then we define the two variables in the rectangular box which is num 1 and num 2 followed by taking the input from the user.

That is num1 comma num two, next we are checking the condition, that is if num1 is less than num2. If the condition is true, then print smallest is num1 and if the condition is false then print smallest is num2 and stop. Coming to example #5 that is writing an algorithm and flow chart to find the area and perimeter of the circle. So here again we have three variables A for Area, P for perimeter and r for radius, so let's get started with the algorithm. Step one is to start. Step 2 is to define A as area P as perimeter, r as radius. Step #3 is to input the radius. Step #4 is area and the perimeter is then calculated by their respective formulas and step #5 this display the area and the perimeter and step #6 is stop. So let's see the flow chart. It remains as it is. So start define the variables input r that as a radius. Then calculate the area and perimeter. Display it to the user and the last step is stop. Example #6 is to swap the two numbers. Now here in order to swap the two numbers, we require 2 numbers. One is a corresponding to number one and one is b corresponding to number 2 before swap. If suppose the value of a.

It is 5 and b is 10 then after swap. The number a should comprise 10 and b should comprise 5 so they exchange their values. So this is what the problem is. We need to exchange the values of a and b. So coming to the algorithm step number one is to start, step #2 is define the two variables a and b. Now in order to swap 2 numbers I'm taking help of a third variable. There are different ways to do it but we will stick To one particular way in which we require the third variable in order to swap the two quantities or the two numbers. So here what we do is we take a temporary variable, in the temporary variable we put the value of a in temp. Next we take that value A&B.From the the value of b we'll put inside a and now finally in b we can put the value of a which is stored. In the temporary variable. So once b gets the value of a, and a gets the value of B, we display it as a comma b and we stop. This is the flowchart of the same. So here are the three statements. The three process statements come in a rectangular box as shown over here.

The references are us.