Hi students.

I'm Miss Froila Valency Rodrigues, Assistant professor, Department

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Center, Assagao-Bardez Goa, so today we'll be

looking at flowcharts and algorithms. So this is under unit

1 i.e flowcharts and algorithms under module number one, so let's get

started. This is the outline of the presentation. It comprises

of the features of C++, why learn C++? Getting started with C++

Algorithm and flowchart.

Learning outcomes, In the end,the student will be able to

understand the features of C++,explain the use of algorithms

and flowcharts. So what is a programming language? Can you

read this? This is an apple, so on the right you can see the

words. That is Apple, seb, apol. So these are the languages

that you understand and you can read. But in the similar manner

the computer also understands a programming language. So in

order to talk to the computer we need to talk to it in the

language the computer understands. And that is a

programming languages. So there are different types of

programming languages we have C.

C++, Python, Java, JavaScript and so on.

Another activity, if I tell you to touch your ears, your nose and

your head, what am Idoing? I'm giving you

instructions so you're doing as per my instructions. Similarly,

I can also give instructions to the computer and it will execute

this instruction based on the language that it understands. So

through the language it understands, I can give it

instructions. So in this course we'll be learning about

programming with C++.

The features of C++, C++ is a multi paradigm language. It

supports at least seven different styles of programming

and the developers can choose any of the styles. C++ is a

general purpose language. It is used to develop games, text of

applications, operating systems and so on. The speed of C++,

like C is amazing and it is optimized and has exceptional

performance. One feature of C++which is not seen in C is that

it is, Object Oriented programming and here it allows

to divide complex problems into smaller sets by using objects.

So why learn C++? It's used to develop games, desktop

applications, it's used in operating systems because of

this great performance and learning C++ makes it easy to

learn other programming subjects like Java, Python and so on. So

C++ helps to understand the Internet architecture of the

computer like how the computer stores data retrieves,

information like using queues

and stacks. So let's get started. To get started. We

require or text editor and a compiler like GCC. Nowadays, on

the Internet you will get alot of open source softwares

which are called IDE's that is integrated development

environment. Some of them are Code Blocks, Dev C++, Turbo

C7, Visual Studio code and so on which can be installed on

the system and you can get started with your C++

programming.

So the word algorithm it relates to the name of a mathematician

that is AI Khowarizmi, which means a procedure or a

technique. It's a set of steps which the software engineer uses

in order to plan and solve a particular problem. So it's a

sequence of steps in order to solve a particular problem.

The algorithm and flowchart, it includes three types of control

structures. I'll be talking about the flowchart a little later,

but here these are the control structures which are common to

both algorithms and flowcharts. First is sequence. What is a

sequence? Now suppose you have instructions I1, I2, I3,I4, I5

and so on, so executing instructions one next executing

Instruction two,instruction 3, 4and so on is nothing but a

sequence. The next type of control structure is branching

or selection. In branching you check a particular condition if

that condition is true, you do a certain set of statements and if

that particular condition is false, you do another set of

statements, so that is branching and the third control structure

is loop or repetition. That is,if at all there is a block of

code which is repeating itself again and again, so we call it

a loop. So all these control structures are used in order to.

Write up algorithms and draw the

flow charts. So how to write algorithms? So there are

particular steps one has to follow, First is step number one

that is start. Step number 2 is define the variable, Step number three

Is define the algorithms input, Step number 4 is outline the

algorithms operations that is used to control structures that

we've learned i.e sequence branches and loops and Step number 5 is output

the results of your algorithms operations and Step number 6 is stop.

Coming to example number one that is to write an algorithm to

calculate the area of the rectangle. So we have here step

number one which is to start, step number 2 is we need 2 variables,

one is width and the 2nd is height. So we take valid names

like H for height and W for width. So they are meaningful

variable names. Step number 3 is input these variables from the

user that is the height and the width is taken from the user.

Step number 4 is find the area of the

rectangle. That is to multiply width and height and step

number four is output this area to the user and step #6 is stop.

Coming to the flowchart. The first design of the flow chart

was by John von Neumann in the year 1945, and unlike algorithm

flow chart uses different symbols in order to solve a

problem. They usually say that a flow chart is a pictorial

representation and a picture is worth a 1000 words, so it's always

better to formulate a problem in the form of

Picture rather than steps. So here a flowchart is a

diagrammatic, graphical representation of a sequence of

steps to solve a particular problem. So let's look at the

different symbols to construct a flowchart. So we have the oval

symbol. So the oval symbol here is to indicate the beginning as

well as the end of the flowchart. So the beginning is

nothing but start, and end of the flowchart is represented by

stop, that is the termination of the flow chart.

Next we have the parallelogram.The parallelogram is used to

Input data from the user as well as to display an output to

the particular user. Rectangle over here it's used for defining

particular variables and for some process statements the next

is Diamond. Diamond is for decision-making, it's used for

control statements, especially when a decision has to be made.

Arrow is for upward, downward,left and right flow of the flow

chart. The next is circle. The circle is for the page

connector. That is, if you want to connect two different flowcharts

, you have to use this connector which is in the

form of a circle and the last is looping. Now looping is

used for loops, like in C++you'll be learning about

different loops like for loop, while loop and do-while loops.

So this is the summary. So we looked at the features of C++,

what exactly C++ is? How to begin with C++ and next we looked at

algorithms, so we said algorithms is a set of steps

or a procedure to solve a particular problem and the

flowchart is a pictorial or diagrammatic representation

which comprises symbols inorder to solve a particular

problem.

References are according to.