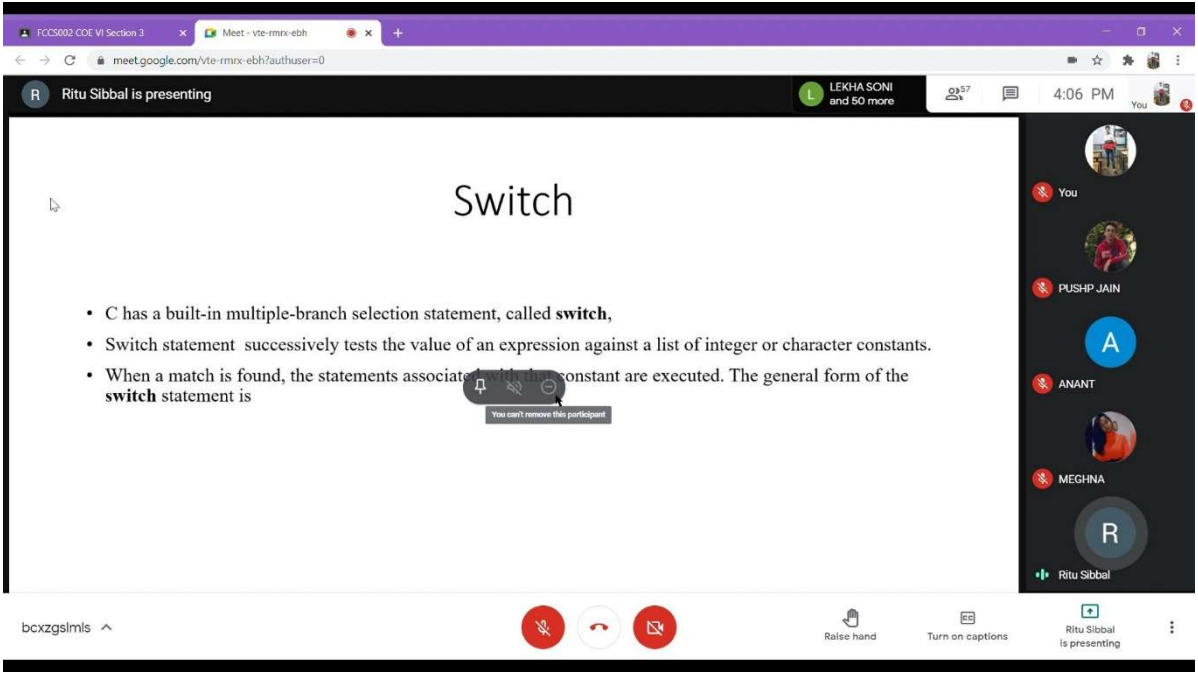
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You
Switch
• C has a built-in multiple-branch selection statement, called switch,
• Switch statement successively tests the value of an expression against a list of integer or character constants.
• When a match is found, the statements associated with that constant are executed. The general form of the switch statement is
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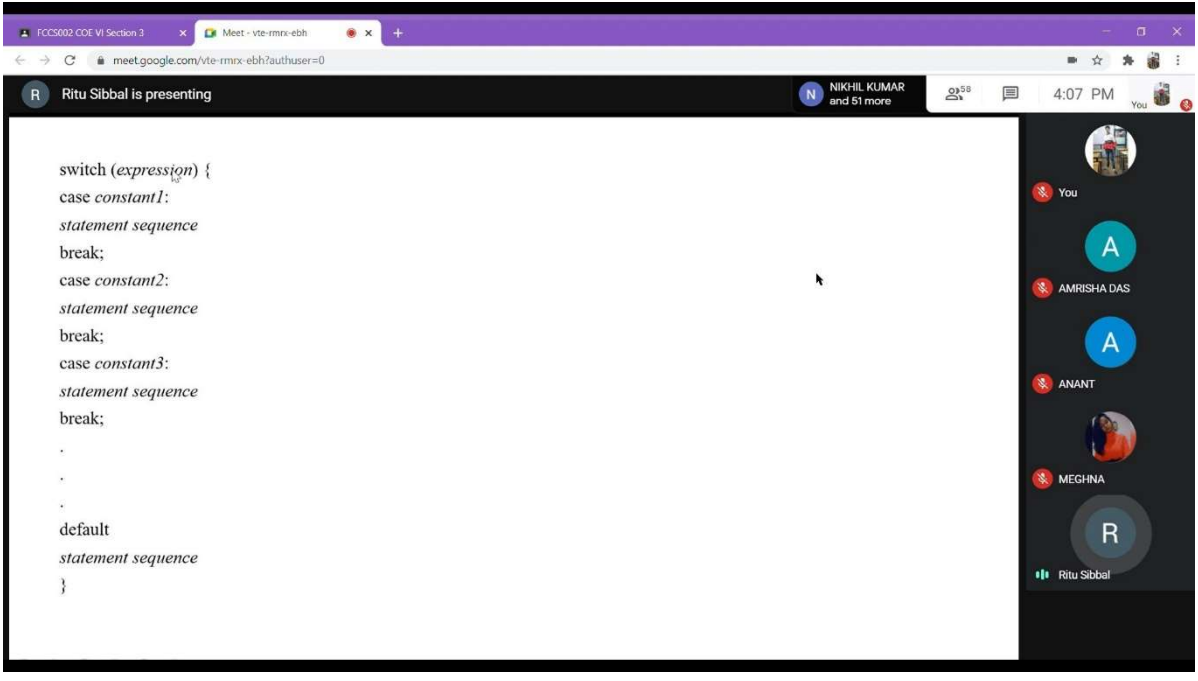
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You
switch (expression) {
case constant1:
statement sequence
break;
case constant2:
statement sequence
break;
case constant3:
statement sequence
break;
.
.
.
default
statement sequence
}
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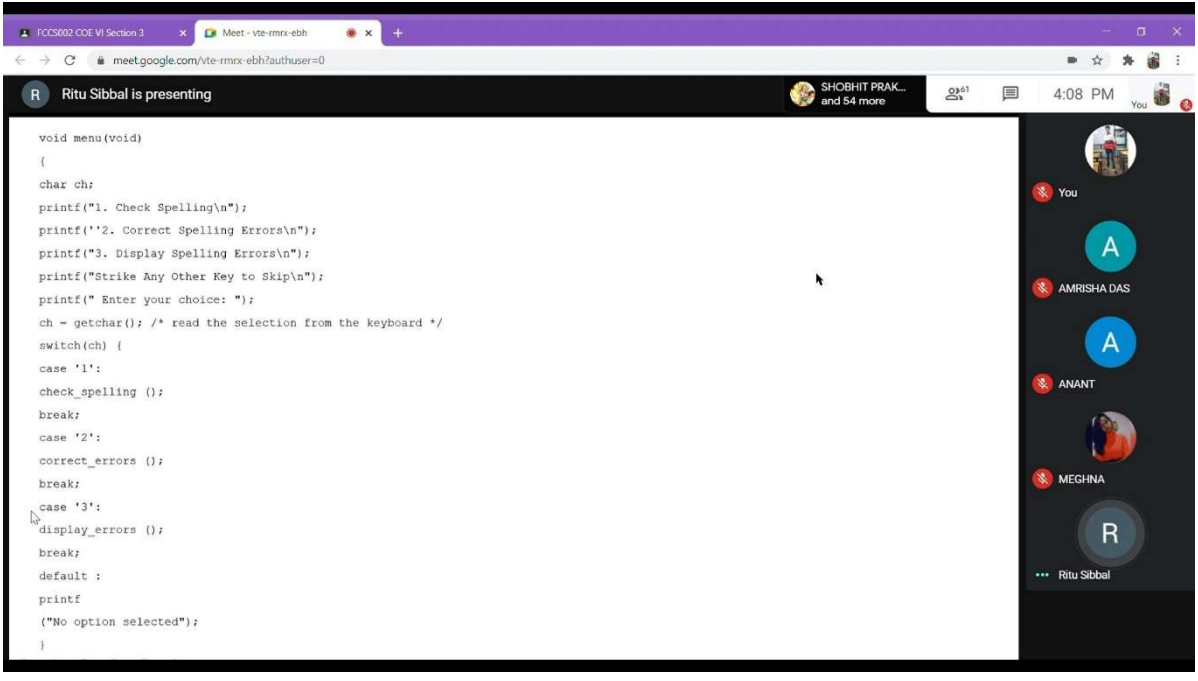
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You
void menu(void)
{
char ch;
printf("1. Check Spelling\n");
printf(''2. Correct Spelling Errors\n");
printf("3. Display Spelling Errors\n");
printf("Strike Any Other Key to Skip\n");
printf(" Enter your choice: ");
ch = getchar(); /* read the selection from the keyboard */
switch(ch) {
case '1':
check_spelling ();
break;
case '2':
correct_errors ();
break;
case '3':
display_errors ();
break;
default :
printf
("No option selected");
}
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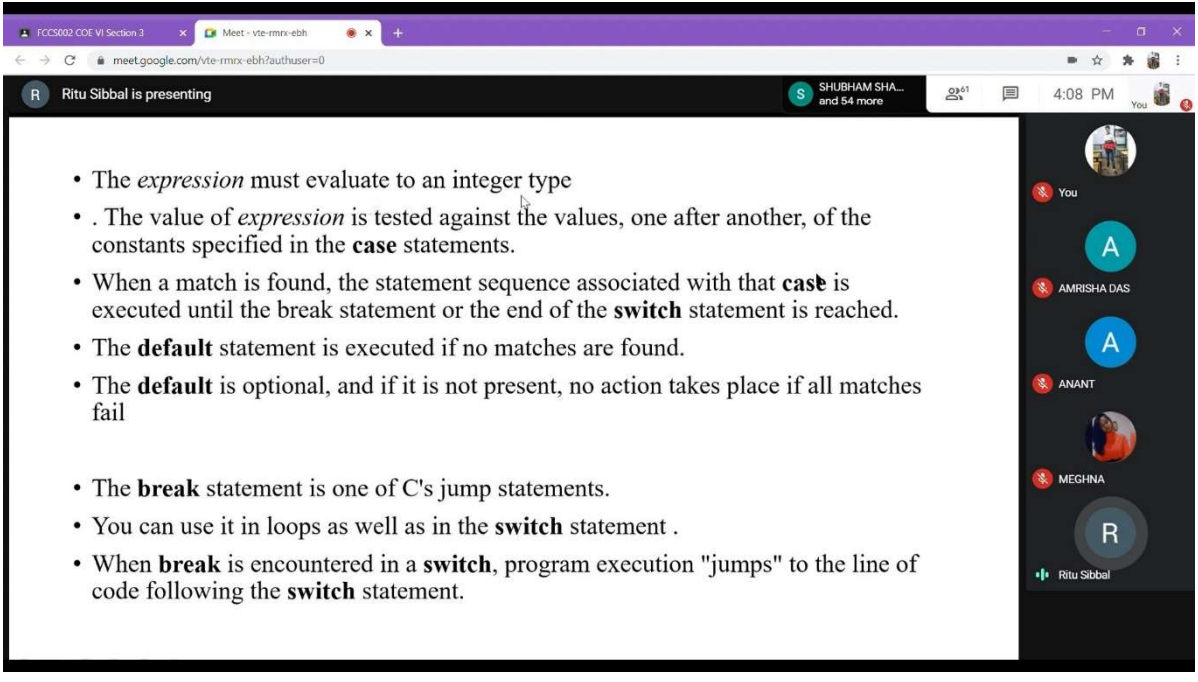
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• The *expression* must evaluate to an integer type
• . The value of *expression* is tested against the values, one after another, of the constants specified in the **case** statements.
• When a match is found, the statement sequence associated with that **case** is executed until the break statement or the end of the **switch** statement is reached.
• The **default** statement is executed if no matches are found.
• The **default** is optional, and if it is not present, no action takes place if all matches fail
• The **break** statement is one of C's jump statements.
• You can use it in loops as well as in the **switch** statement .
• When **break** is encountered in a **switch**, program execution "jumps" to the line of code following the **switch** statement.
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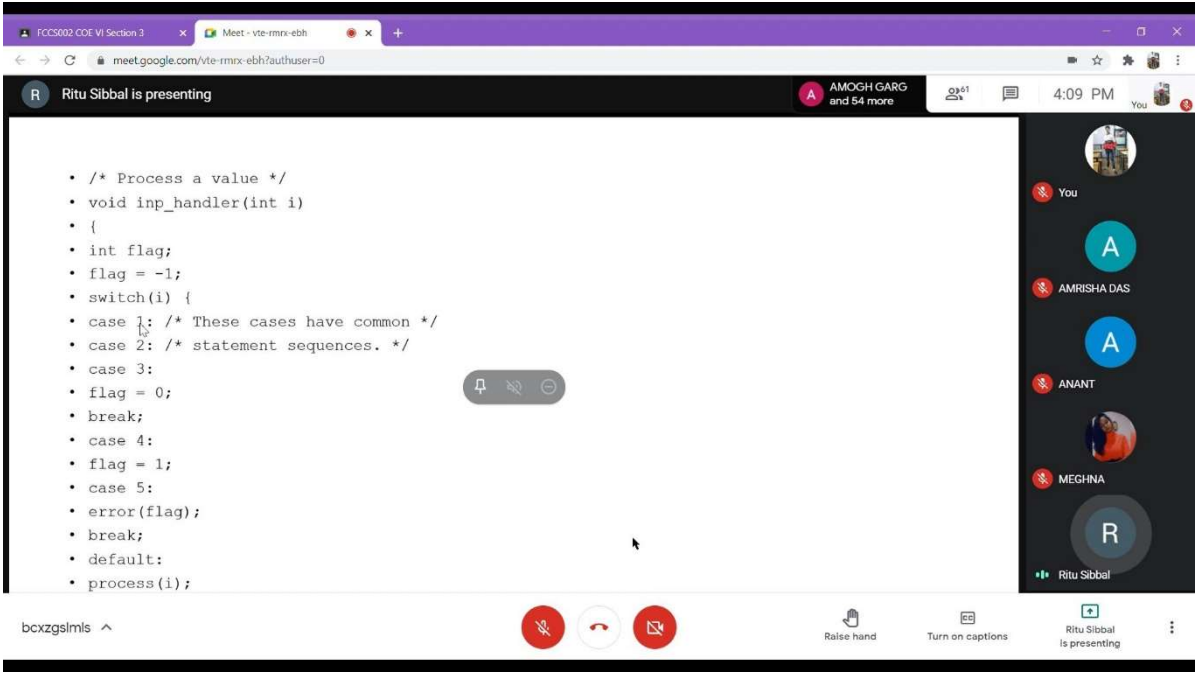
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/* Process a value */
void inp_handler(int i)
{
int flag;
flag = -1;
switch(i) {
case 1: /* These cases have common */
case 2: /* statement sequences. */
case 3:
flag = 0;
break;
case 4:
flag = 1;
case 5:
error(flag);
break;
default:
process(i);
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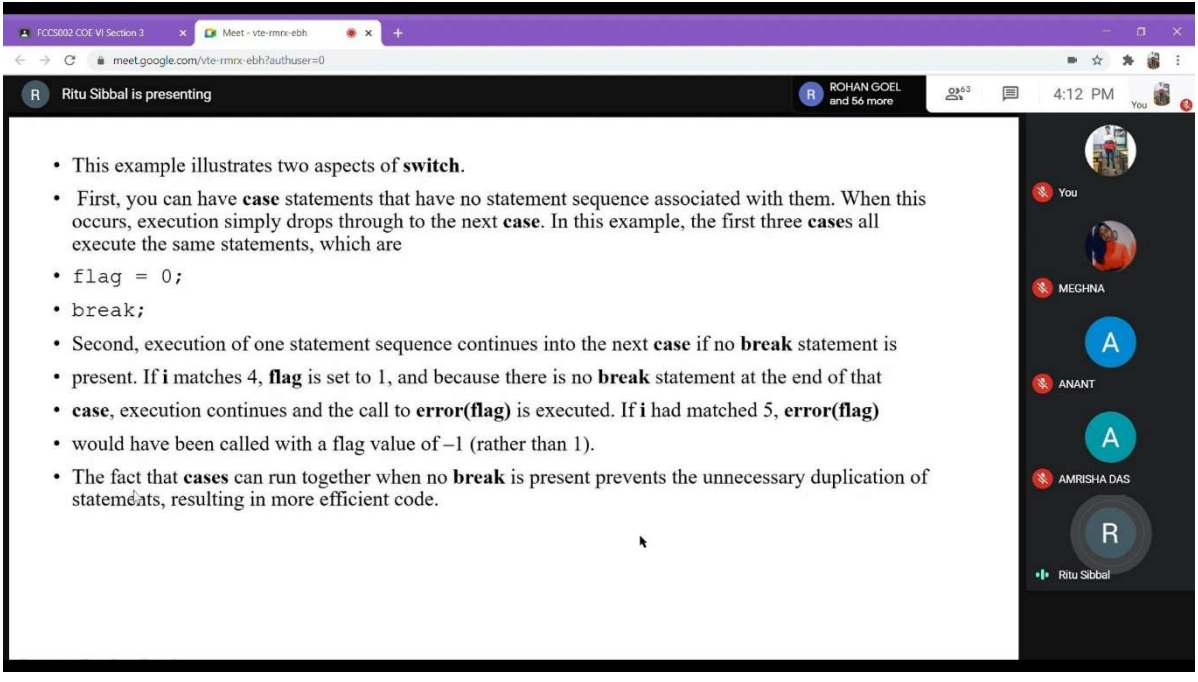
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This example illustrates two aspects of switch.
First, you can have case statements that have no statement sequence associated with them. When this occurs, execution simply drops through to the next case. In this example, the first three cases all execute the same statements, which are
flag = 0;
break;
Second, execution of one statement sequence continues into the next case if no break statement is
present. If i matches 4, flag is set to 1, and because there is no break statement at the end of that
case, execution continues and the call to error(flag) is executed. If i had matched 5, error(flag)
would have been called with a flag value of –1 (rather than 1).
The fact that cases can run together when no break is present prevents the unnecessary duplication of statements, resulting in more efficient code.
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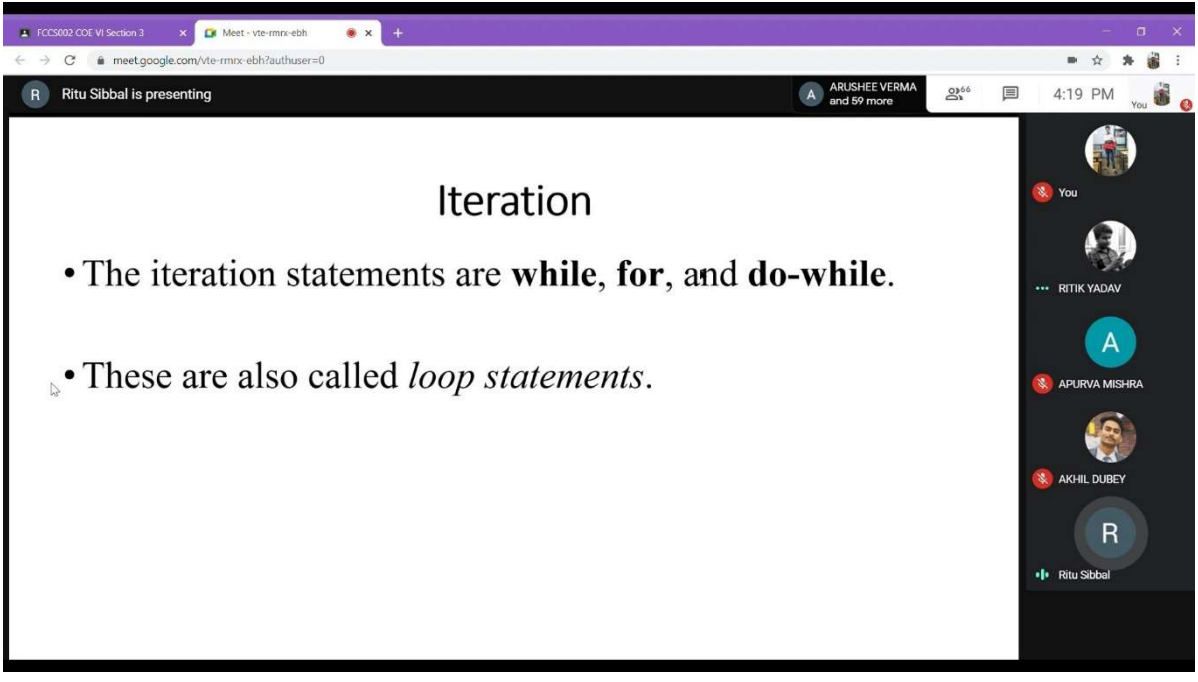
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Iteration
• The iteration statements are while, for, and do-while.
• These are also called loop statements.
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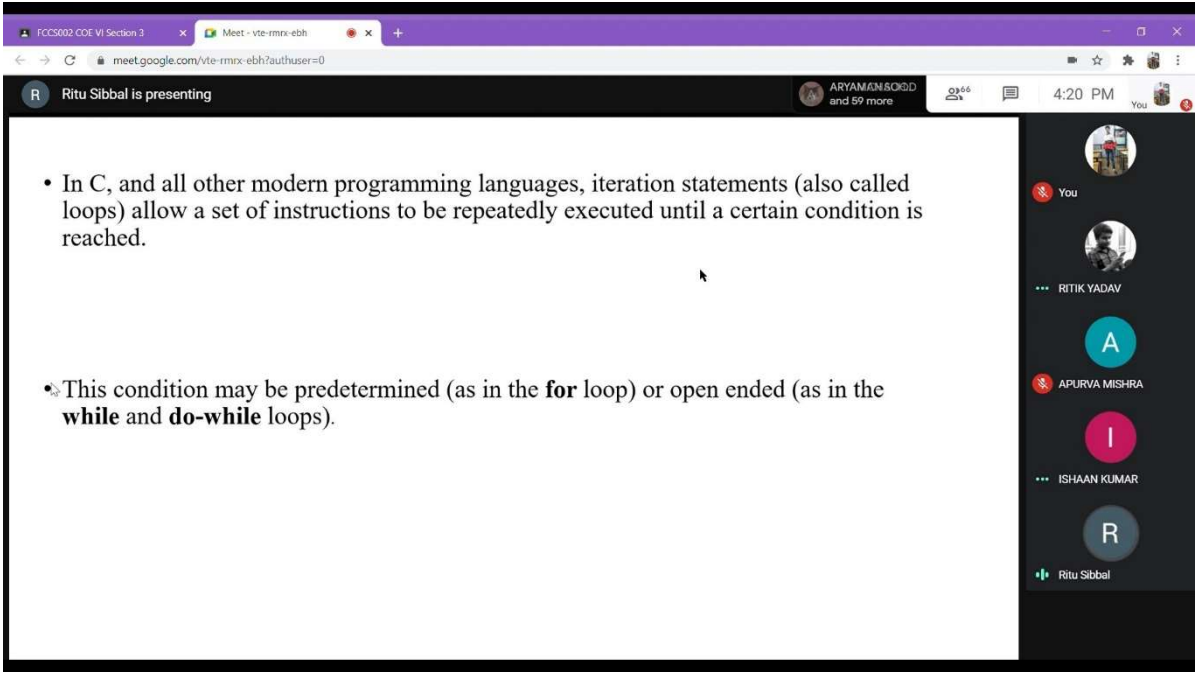
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• In C, and all other modern programming languages, iteration statements (also called loops) allow a set of instructions to be repeatedly executed until a certain condition is reached.
• This condition may be predetermined (as in the for loop) or open ended (as in the while and do-while loops).
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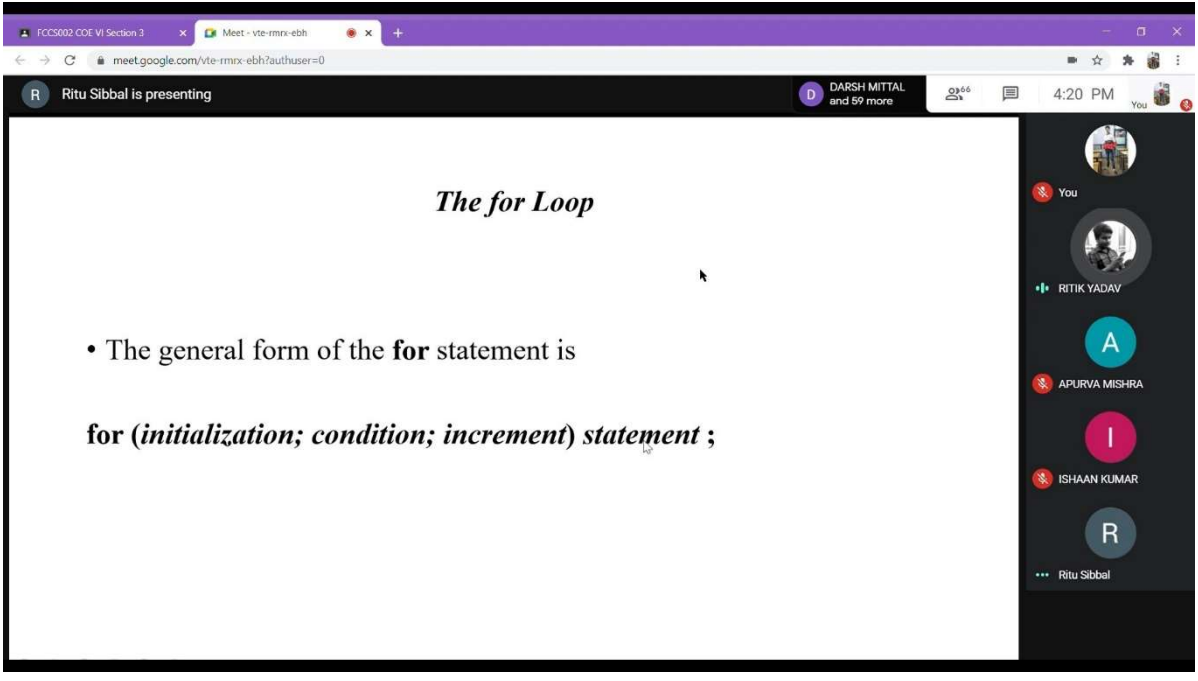
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The for Loop
• The general form of the for statement is
for (initialization; condition; increment) statement ;
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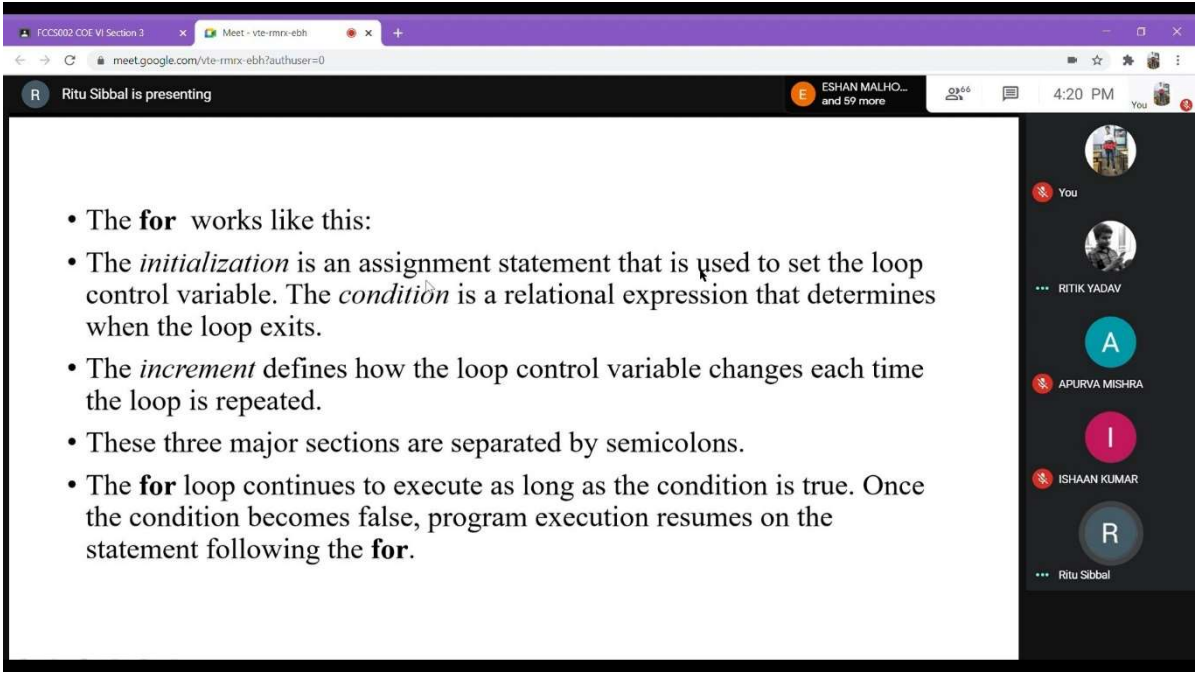
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• The **for** works like this:
• The *initialization* is an assignment statement that is used to set the loop control variable. The *condition* is a relational expression that determines when the loop exits.
• The *increment* defines how the loop control variable changes each time the loop is repeated.
• These three major sections are separated by semicolons.
• The **for** loop continues to execute as long as the condition is true. Once the condition becomes false, program execution resumes on the statement following the **for**.
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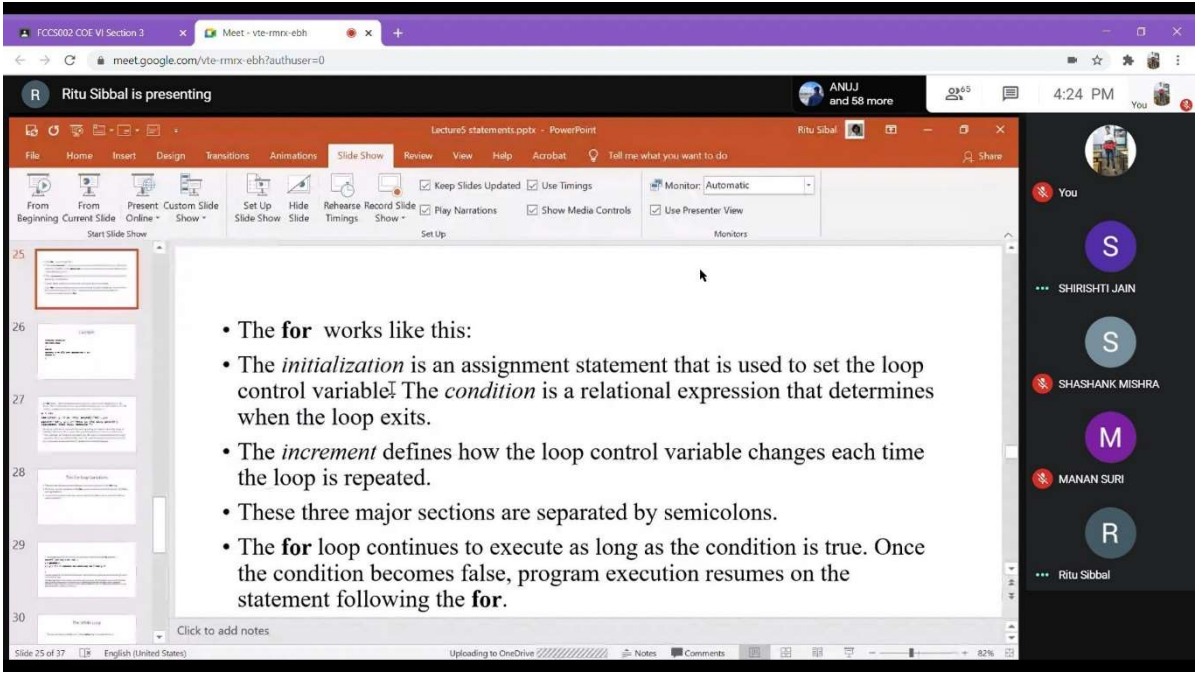
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• The for works like this:
• The initialization is an assignment statement that is used to set the loop control variable. The condition is a relational expression that determines when the loop exits.
• The increment defines how the loop control variable changes each time the loop is repeated.
• These three major sections are separated by semicolons.
• The for loop continues to execute as long as the condition is true. Once the condition becomes false, program execution resumes on the statement following the for.
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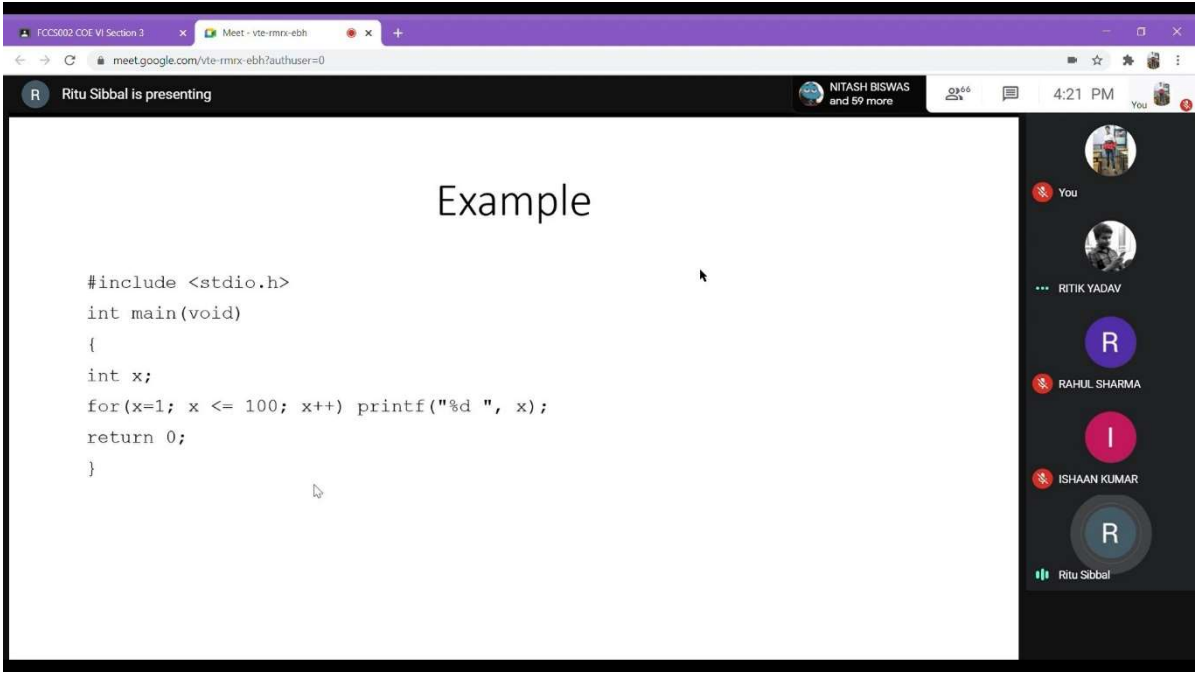
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Example
#include <stdio.h>
int main(void)
{
int x;
for(x=1; x <= 100; x++) printf("%d ", x);
return 0;
}
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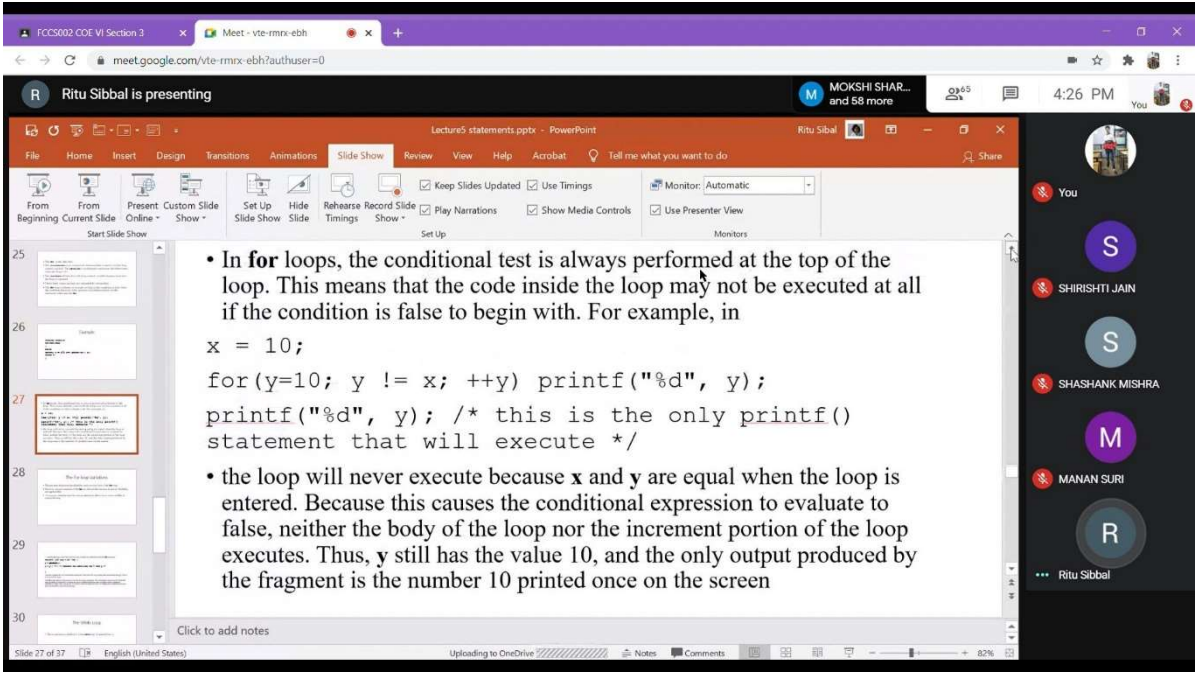
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• In for loops, the conditional test is always performed at the top of the loop. This means that the code inside the loop may not be executed at all if the condition is false to begin with. For example, in
x = 10;
for(y=10; y != x; ++y) printf("%d", y);
printf("%d", y); /* this is the only printf() statement that will execute */
• the loop will never execute because x and y are equal when the loop is entered. Because this causes the conditional expression to evaluate to false, neither the body of the loop nor the increment portion of the loop executes. Thus, y still has the value 10, and the only output produced by the fragment is the number 10 printed once on the screen
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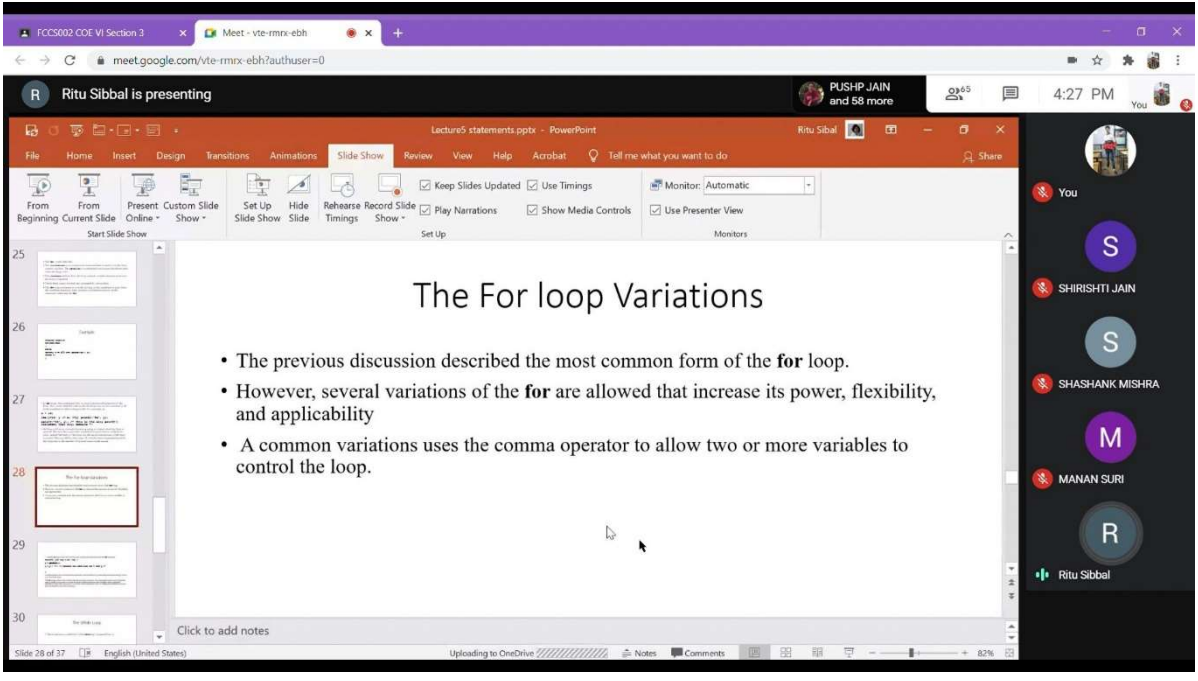
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The For loop Variations
• The previous discussion described the most common form of the for loop.
• However, several variations of the for are allowed that increase its power, flexibility, and applicability
• A common variations uses the comma operator to allow two or more variables to control the loop.
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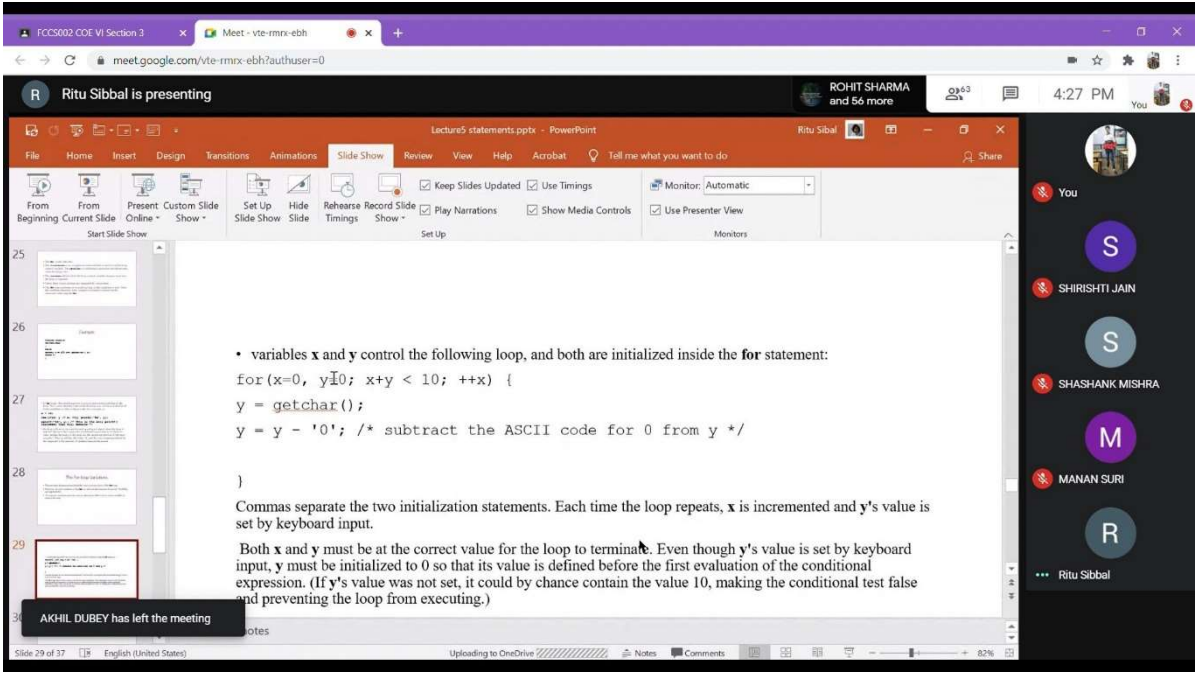
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• variables x and y control the following loop, and both are initialized inside the for statement:
for(x=0, y=0; x+y < 10; ++x) {
y = getchar();
y = y - '0'; /* subtract the ASCII code for 0 from y */
}
Commas separate the two initialization statements. Each time the loop repeats, x is incremented and y's value is set by keyboard input.
Both x and y must be at the correct value for the loop to terminate. Even though y's value is set by keyboard input, y must be initialized to 0 so that its value is defined before the first evaluation of the conditional expression. (If y's value was not set, it could by chance contain the value 10, making the conditional test false and preventing the loop from executing.)
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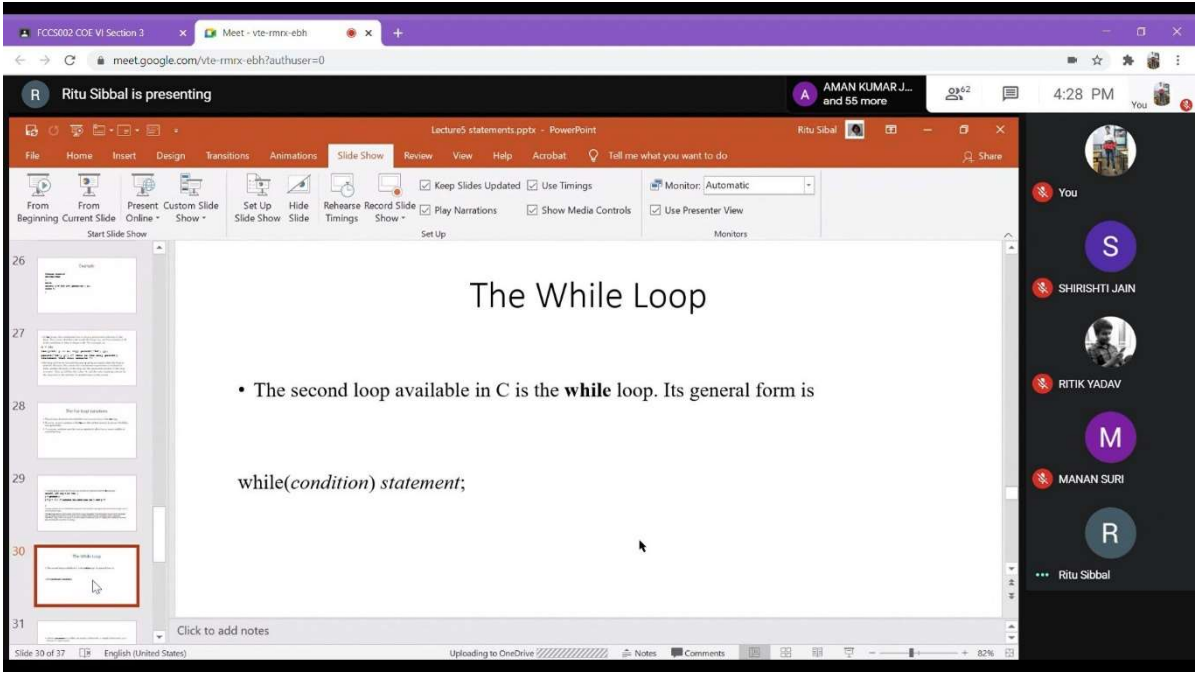
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The While Loop
• The second loop available in C is the **while** loop. Its general form is
while(*condition*) *statement*;
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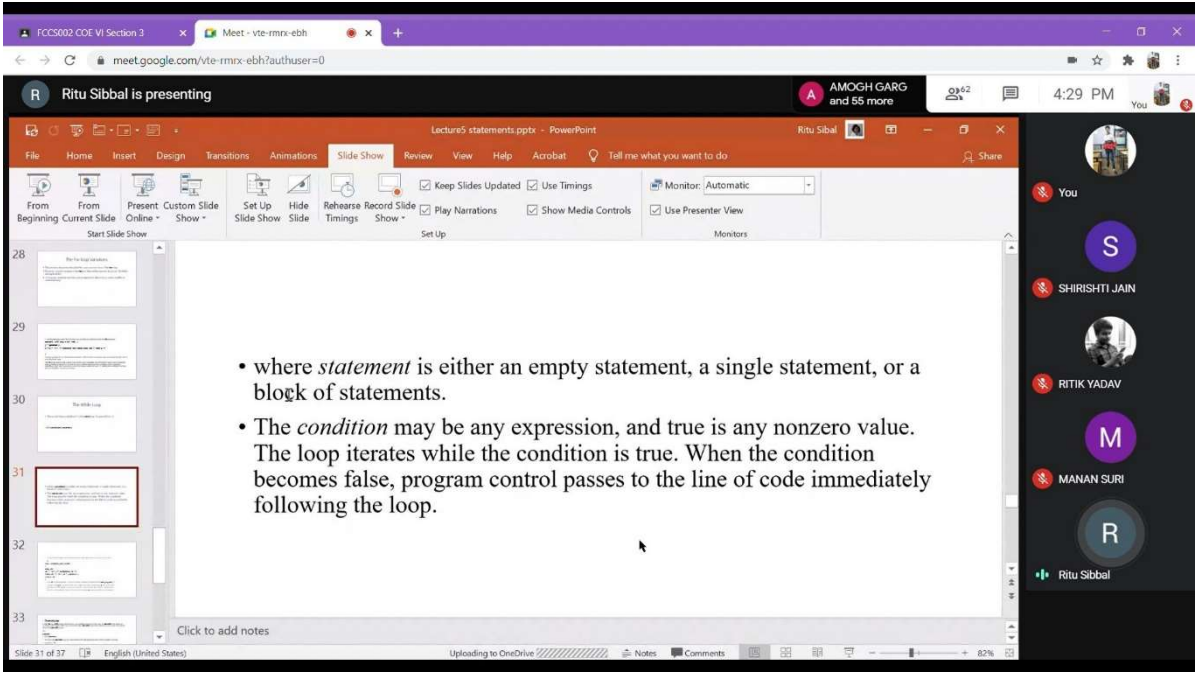
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• where *statement* is either an empty statement, a single statement, or a block of statements.
• The *condition* may be any expression, and true is any nonzero value. The loop iterates while the condition is true. When the condition becomes false, program control passes to the line of code immediately following the loop.
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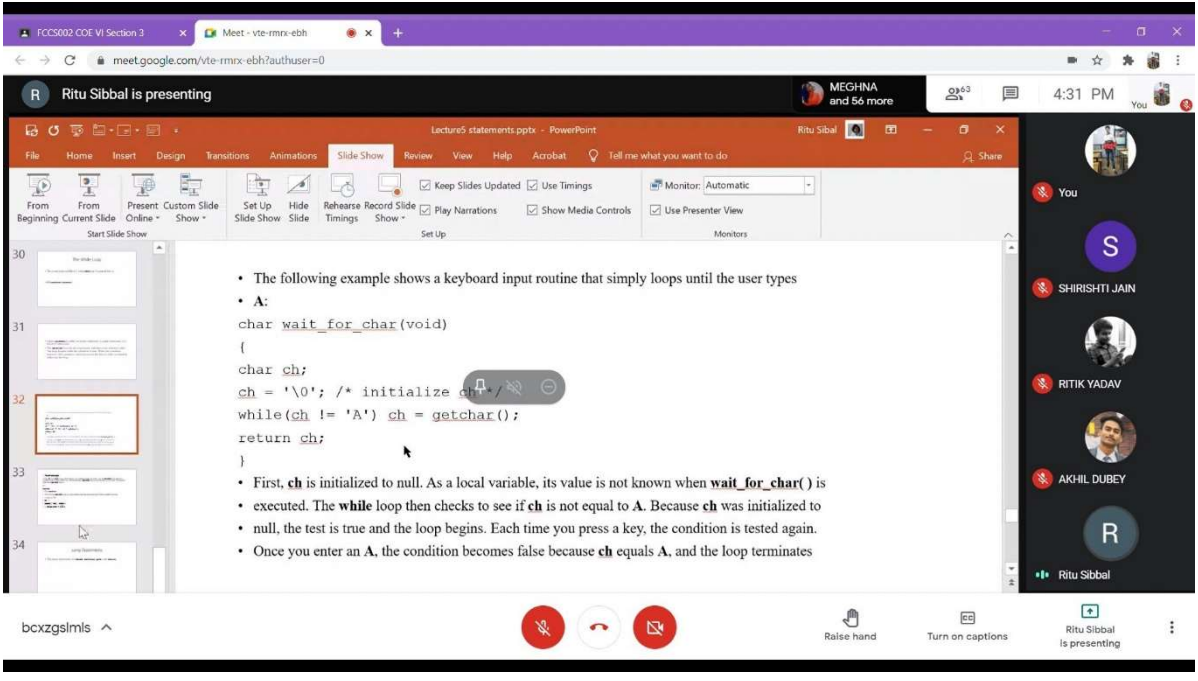
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• The following example shows a keyboard input routine that simply loops until the user types
• A:
char wait_for_char(void)
{
char ch;
ch = '\0'; /* initialize ch */
while(ch != 'A') ch = getchar();
return ch;
}
• First, ch is initialized to null. As a local variable, its value is not known when wait_for_char( ) is
• executed. The while loop then checks to see if ch is not equal to A. Because ch was initialized to
• null, the test is true and the loop begins. Each time you press a key, the condition is tested again.
• Once you enter an A, the condition becomes false because ch equals A, and the loop terminates
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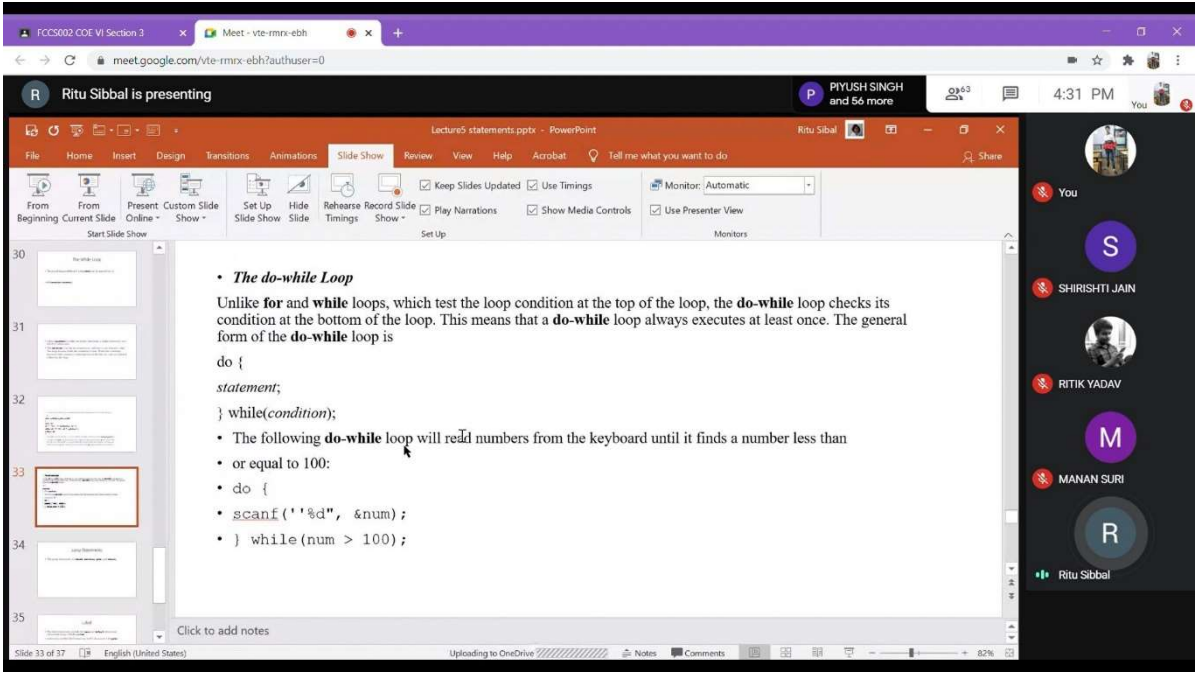
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• The do-while Loop
Unlike for and while loops, which test the loop condition at the top of the loop, the do-while loop checks its condition at the bottom of the loop. This means that a do-while loop always executes at least once. The general form of the do-while loop is
do {
statement;
} while(condition);
• The following do-while loop will read numbers from the keyboard until it finds a number less than
• or equal to 100:
• do {
• scanf(''%d", &num);
• } while(num > 100);
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