DAILY ASSESSMENT FORMAT

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Course:	**sololearn**	**USN:**	**4AL17EC075**
Topic:	**C programmimg**	**Semester & Section:**	**6TH B**
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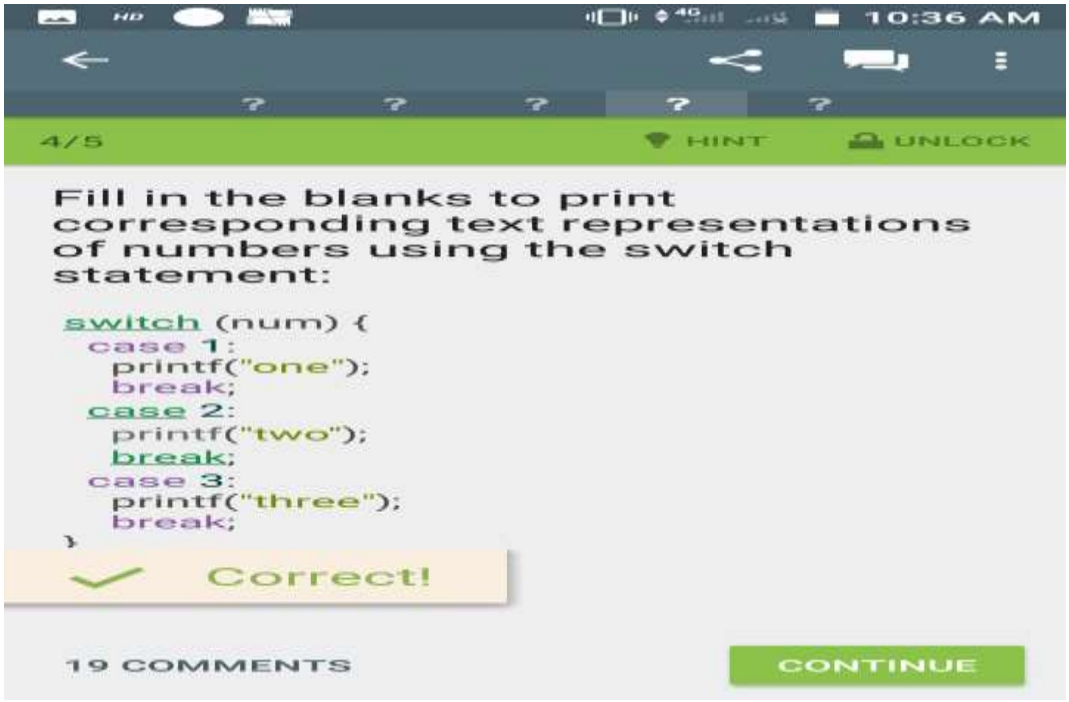
FORENOON SESSION DETAILS

Image of session



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Basic concept of c

C is a procedural programming language. It was initially developed by Dennis Ritchie as a system programming language to write operating system. The main features of C language include low-level access to memory, simple set of keywords, and clean style, these features make C language suitable for system programming like operating system or compiler development.

C – for loop in C programming with example

A loop is used for executing a block of statements repeatedly until a given condition returns false.

C For loop

This is one of the most frequently used loop in C programming.
Syntax of for loop:

```
for (initialization; condition test; increment or decrement)
{
    //Statements to be executed repeatedly
}
```

Flow Diagram of For loop

Step 1: First initialization happens and the counter variable gets initialized.
Step 2: In the second step the condition is checked, where the counter variable is tested for the given condition, if the condition returns true then the C statements inside the body of for loop gets executed, if the condition returns false then the for loop gets terminated and the control comes out of the loop.
Step 3: After successful execution of statements inside the body of loop, the counter variable is incremented or decremented, depending on the operation (++ or –).

Example of For loop

```
#include <stdio.h>
int main()
{
  int i;
  for (i=1; i<=3; i++)
  {
     printf("%d\n", i);
  }
  return 0;
}
```

Output:

```
1
2
3
```

Various forms of for loop in C

I am using variable num as the counter in all the following examples –
1) Here instead of num++, I'm using num=num+1 which is same as num++.

```
for (num=10; num<20; num=num+1)
```

2) Initialization part can be skipped from loop as shown below, the counter variable is declared before the loop.

```
int num=10;
```

```
for (;num<20;num++)
```

Note: Even though we can skip initialization part but semicolon (;) before condition is must, without which you will get compilation error.

3) Like initialization, you can also skip the increment part as we did below. In this case semicolon (;) is must after condition logic. In this case the increment or decrement part is done inside the loop.

```
for (num=10; num<20; )
{
    //Statements
    num++;
}
```

4) This is also possible. The counter variable is initialized before the loop and incremented inside the loop.

```
int num=10;
for (;num<20;)
{
    //Statements
    num++;
}
```

5) As mentioned above, the counter variable can be decremented as well. In the below example the variable gets decremented each time the loop runs until the condition num>10 returns false.

```
for(num=20; num>10; num--)
```

Nested For Loop in C

Nesting of loop is also possible. Lets take an example to understand this:

```
#include <stdio.h>
int main()
{
  for (int i=0; i<2; i++)
  {
            for (int j=0; j<4; j++)
            {
              printf("%d, %d\n",i ,j);
            }
  }
  return 0;
}
```

Output:

```
0, 0
0, 1
0, 2
0, 3
1, 0
```

```
1, 1
1, 2
1, 3
```

In the above example we have a for loop inside another for loop, this is called nesting of loops. One of the example where we use nested for loop is Two dimensional array.

Multiple initialization inside for Loop in C

We can have multiple initialization in the for loop as shown below.

```
for (i=1,j=1;i<10 && j<10; i++, j++)
```

What's the difference between above for loop and a simple for loop?

1. It is initializing two variables. Note: both are separated by comma (,).
2. It has two test conditions joined together using AND (&&) logical operator. Note: You cannot use multiple test conditions separated by comma, you must use logical operator such as && or || to join conditions.
3. It has two variables in increment part. **Note:** Should be separated by comma.

Example of for loop with multiple test conditions

```
#include <stdio.h>
int main()
{
  int i,j;
  for (i=1,j=1 ; i<3 || j<5; i++,j++)
  {
            printf("%d, %d\n",i ,j);
  }
  return 0;
}
```

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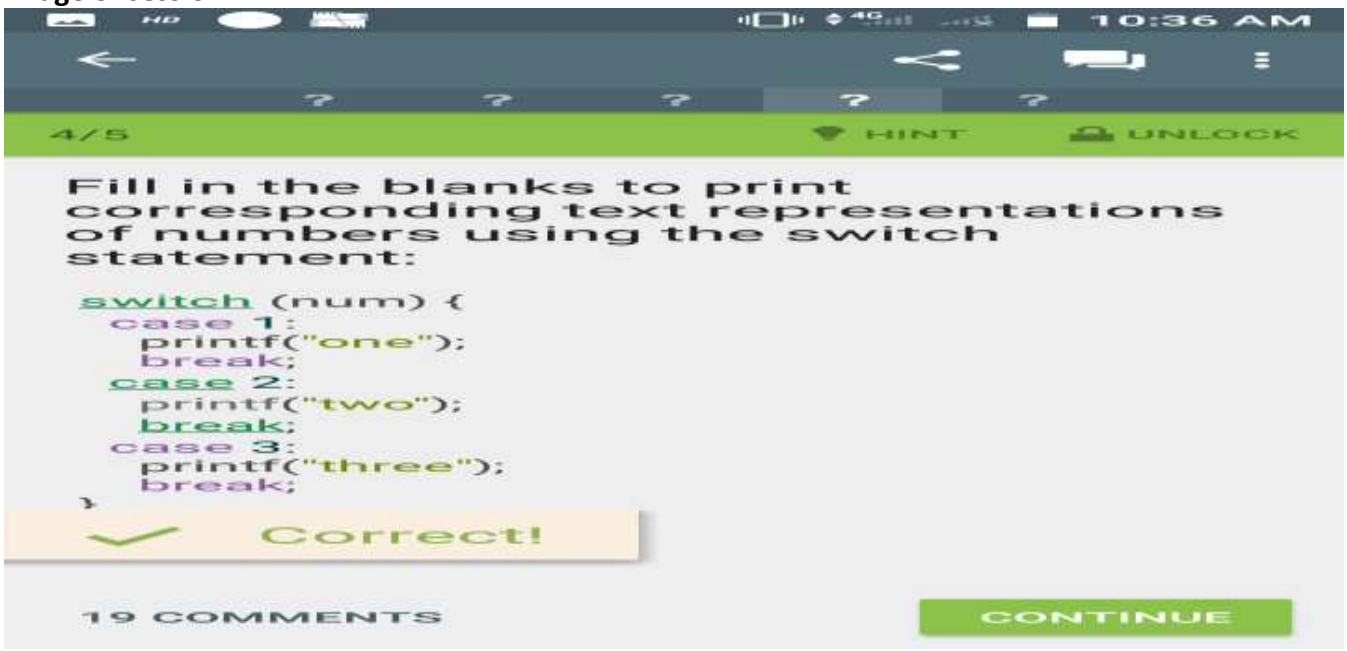
AFTERNOON SESSION DETAILS

Image of session



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There are two types of functions in C programming:
Library **Functions**: are the **functions** which are declared in the **C** header files such as scanf(), printf(), gets(), puts(), ceil(), floor() etc.

User-defined **functions**: are the **functions** which are created by the **C programmer**, so that he/she can use it many times.

Array

An **array** is a collection of data items, all of the same type, accessed using a common name. A one-dimensional **array** is like a list; A two dimensional **array** is like a table; The **C** language places no limits on the number of dimensions in an **array**, though specific implementations may.

C – Pointer

Pointers in C language is a variable that stores/points the address of another variable. A **Pointer in C** is used to allocate memory dynamically i.e. at run time. The **pointer** variable might be belonging to any of the data type such as int, float, char, double, short etc.

Function Pointer in C

In C, like normal data pointers (int *, char *, etc), we can have pointers to functions. Following is a simple example that shows declaration and function call using function pointer.

filter_none
edit
play_arrow
brightness_4

```
#include <stdio.h>

// A normal function with an int parameter

// and void return type

void fun(int a)

{

   printf("Value of a is %d\n", a);

}


int main()

{

   // fun_ptr is a pointer to function fun()

   void (*fun_ptr)(int) = &fun;
```

```
    /* The above line is equivalent of following two
       void (*fun_ptr)(int);
       fun_ptr = &fun;
    */

    // Invoking fun() using fun_ptr
    (*fun_ptr)(10);

    return 0;
}
```

Output:

```
Value of a is 10
```

String

In **C programming**, a **string** is a sequence of characters terminated with a null character \0 . For example: char **c**[] = "**c string**"; When the compiler encounters a sequence of characters enclosed in the double quotation marks, it appends a null character \0 at the end by default.