REPORT JUNE 22

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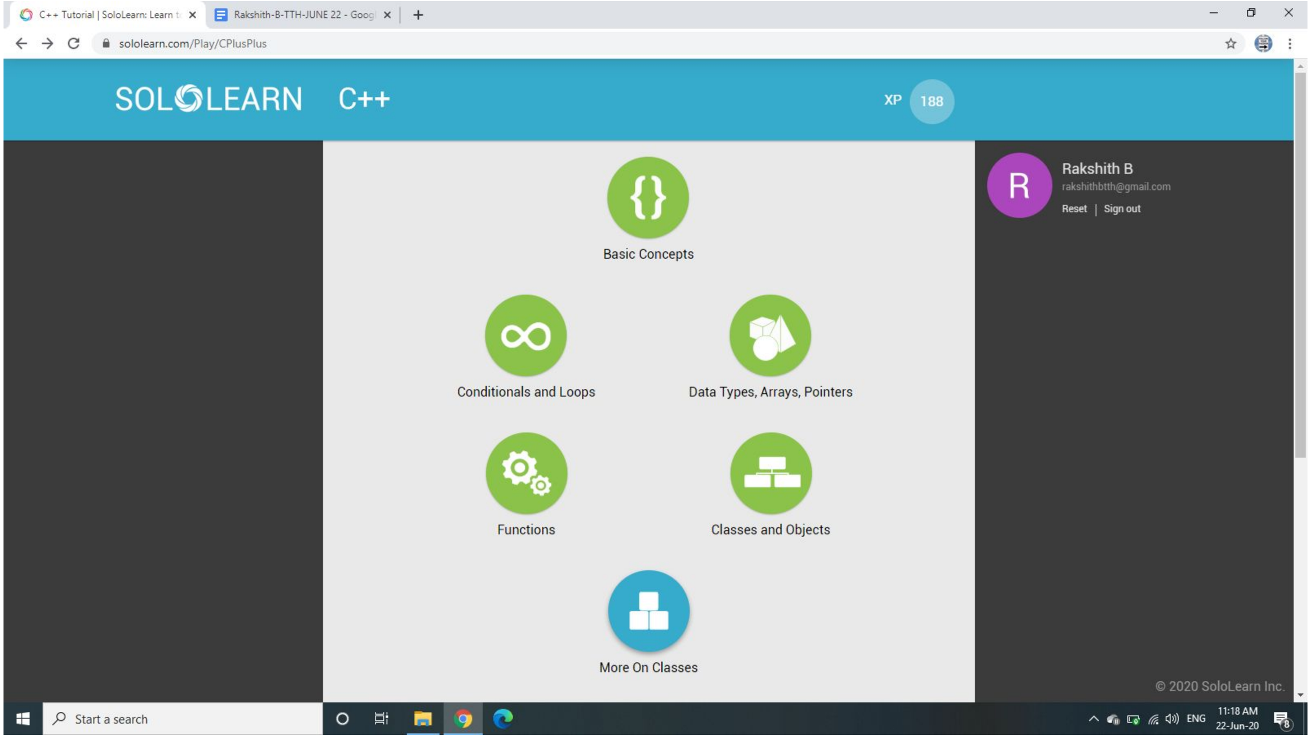
FORENOON SESSION DETAILS

Image of session



Report –

C++ is a general-purpose programming language.

C++ is used to create computer programs. Anything from art applications, music players and even video games!

Your First C++ Program

A C++ program is a collection of commands or statements.

Below is a simple code that has "Hello world!" as its output.

```
#include <iostream>
using namespace std;

int main()
{
 cout << "Hello world!";
 return 0;
}
```

The C++ compiler **ignores** blank lines.
In general, blank lines serve to improve the code's readability and structure.

```
#include <iostream>
using namespace std;

int main()
{
 cout << "Hello world!";
 return 0;
}
```

Main

Program execution begins with the main function, int main().

```
    #include <iostream>
    using namespace std;

int main()
{
 cout << "Hello world!";
 return 0;
    }
```

Your First C++ Program

The next line, **cout << "Hello world!";** results in the display of "Hello world!" to the screen.

```
#include <iostream>
using namespace std;

int main()
{
 cout << "Hello world!";
 return 0;
}
```

Statements

A block is a set of logically connected statements, surrounded by opening and closing curly braces.
For example:

```
{
 cout << "Hello world!";
 return 0;
}
```

Return

The last instruction in the program is the **return** statement. The line **return 0;** terminates the **main()** function and causes it to return the value 0 to the calling process. A non-zero value (usually of 1) signals abnormal termination.

```
#include <iostream>
using namespace std;

int main()
{
 cout << "Hello world!";
return 0;
}
```

Getting the Tools

You need both of the following components to build C++ programs.

1. **Integrated Development Environment (IDE)**: Provides tools for writing source code. Any text editor can be used as an IDE.
2. **Compiler**: Compiles source code into the final executable program. There are a number of C++ compilers available. The most frequently used and free available compiler is the **GNU C/C++** compiler.

Various C++ IDEs and compilers are available. We'll use a free tool called **Code::Blocks**, which includes both an IDE and a compiler, and is available for Windows, Linux and MacOS.

To download Code::Blocks, go to http://www.codeblocks.org/, Click the **Downloads** link, and choose "**Download the binary release**".

Choose your OS and download the setup file, which includes the C++ compiler (For Windows, it's the one with **mingw** in the name).

Getting the Tools

To create a project, open Code::Blocks and click "**Create a new project**" (or File->New->Project).

This will open a dialog of project templates. Choose **Console application** and click **Go**.

Make sure the **Compiler** is selected, and click **Finish**.

GNU GCC is one of the popular compilers available for Code::Blocks.

On the left sidebar, expand **Sources**. You'll see your project, along with its source files. Code::Blocks automatically created a **main.cpp** file that includes a basic Hello World program (C++ source files have .cpp, .cp or .c extensions).

Your First C++ Program

You can add multiple insertion operators after **cout**.

```
cout << "This " << "is " << "awesome!";
```

New Line

The cout operator does not insert a line break at the end of the output.

One way to print two lines is to use the endl manipulator, which will put in a line break.

```
#include <iostream>
using namespace std;

int main()
{
 cout << "Hello world!" << endl;
 cout << "I love programming!";
 return 0;
}
```

The new line character \n can be used as an alternative to endl.
The backslash (\) is called an escape character, and indicates a "special" character.

```
#include <iostream>
using namespace std;

int main()
{
  cout << "Hello world! \n";
  cout << "I love programming!";
  return 0;
}
```

Two newline characters placed together result in a blank line.

```
#include <iostream>
using namespace std;

int main()
{
  cout << "Hello world! \n\n";
  cout << "I love programming!";
  return 0;
}
```

Multiple New Lines

Using a single cout statement with as many instances of \n as your program requires will print out multiple lines of text.

```
#include <iostream>
using namespace std;

int main()
{
  cout << " Hello \n world! \n I \n love \n programming!";
  return 0;
}
```

Comments

Comments are explanatory statements that you can include in the C++ code to explain what the code is doing.

The compiler ignores everything that appears in the comment, so none of that information shows in the result.

A comment beginning with two slashes (//) is called a single-line comment. The slashes tell the compiler to ignore everything that follows, until the end of the line.

For example:

```
#include <iostream>
using namespace std;

int main()
{
  // prints "Hello world"
  cout << "Hello world!";
  return 0;
}
```

Decision Making

```
if (condition) {
  statements
}
```

The if Statement

```
if (7 > 4) {
 cout <<  "Yes";
}

// Outputs "Yes"
```

Relational Operators

```
if (10 != 10) {
 cout <<  "Yes";
}
```

The else Statement

```
if (condition) {
 //statements
}
else {
//statements
}
```