

Microsoft Visual Studio Build Issue

Course: COEN-243

Professor: Dr. Moataz Chouchen

Location: H-833 computer workstations

Context

I attempted to compile a classic “Hello World” program in C++ using Microsoft Visual Studio that comes installed on the computer workstations in H-833. Despite the simplicity of this program, the build process would fail in the following way:

warning MSB8003: The windowsSdkDir property is not defined. Some build tools may not be found.

Here are screenshots of the program and build output:

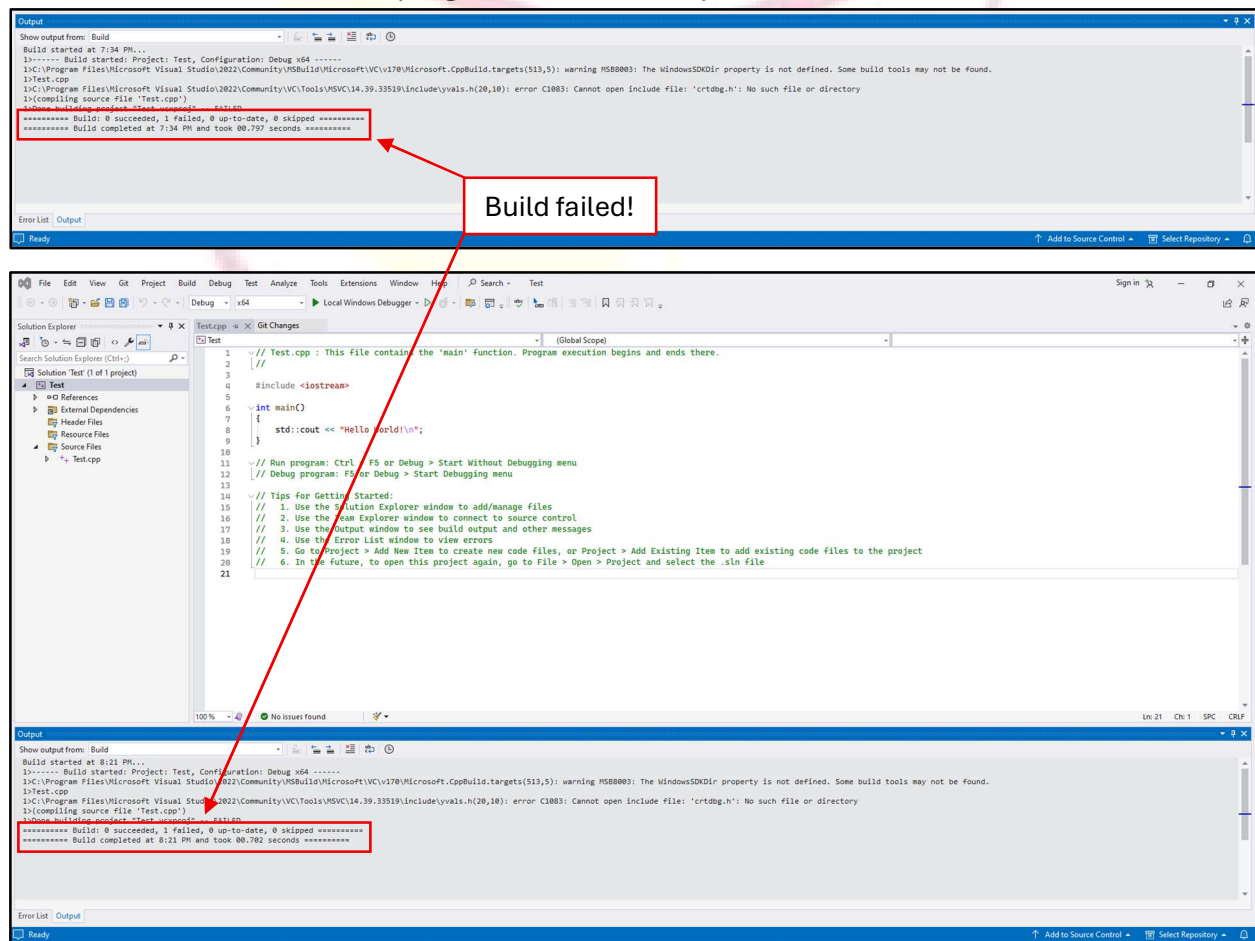


Figure 1 & 2: “Hello World” program and build output

Debugging

From the debugging that I have performed, I have been able to conclude the following:

- The “Desktop development with C++” option is checked in VS Installer.
- Correct components from the above-mentioned are listed as installed.
- The project in VS is configured correctly according to many guides.
- There is no antivirus interfering with VS.

However, there seems to be an issue with the Windows SDK installation on the computers. Although it is listed as installed in VS Installer, I noticed the following:

- Under **Project Properties** -> **General**, the SDK Version dropdown only shows “inherit from parent or project defaults”.
- There is no explicit SDK version shown.
- The environment variable `WindowsSdkDir` is not defined.
- The “Include” folder is missing from the following directory:
`C:\Program Files (x86)\windows kits\10\Include`

Here are some more screenshots:

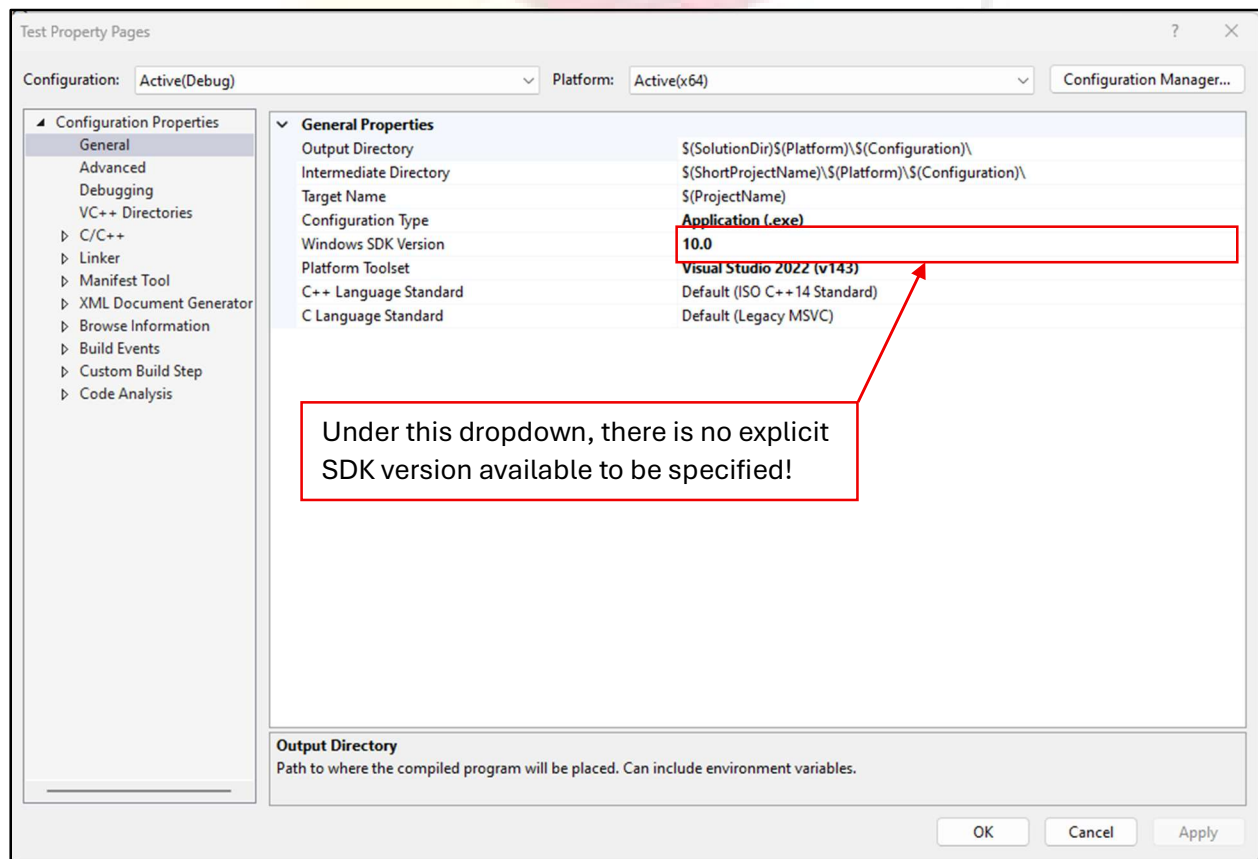


Figure 3: project properties window with improper SDK installation

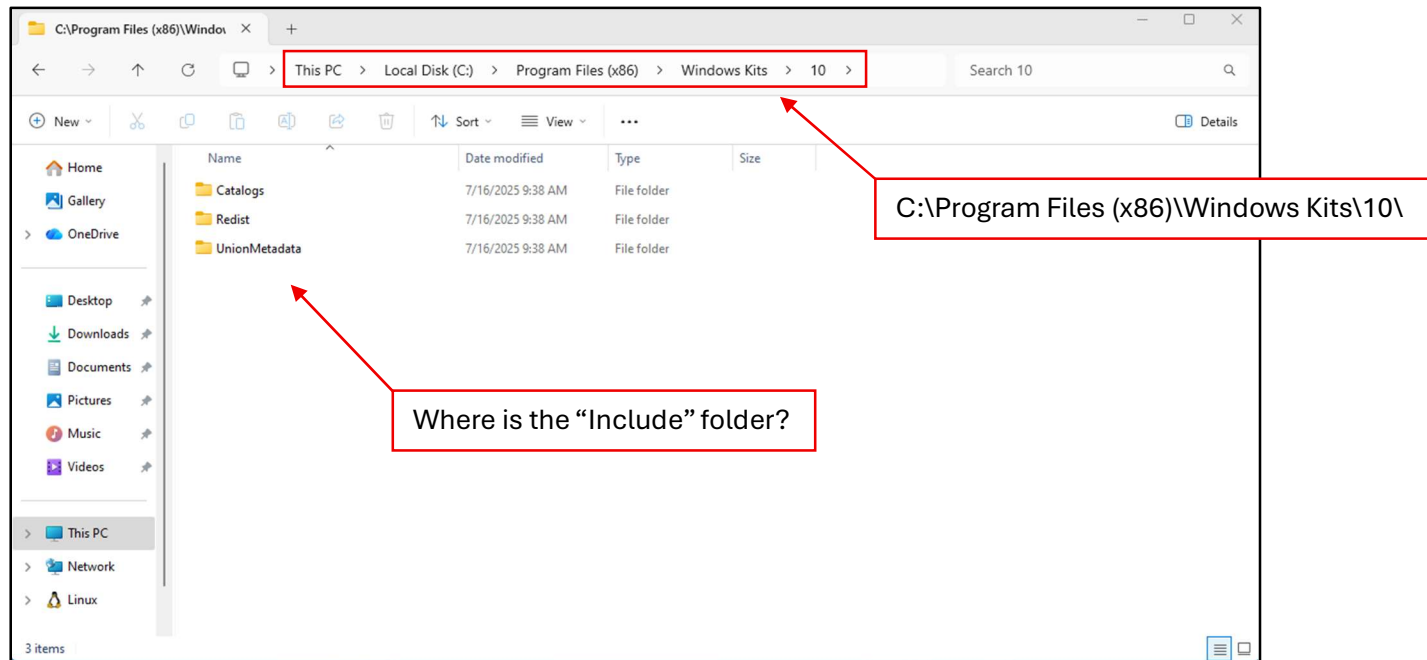


Figure 4: missing critical folder

Cause

According to my research, VS relies on the SDK Include and Lib directories to configure the C++ build environment. Since this installation seems to be incomplete, VS runs into the following issues:

- MSBuild can't fully initialize the toolchain.
- The project cannot correctly bind to a SDK version.
- We get the MSB8003 warning no matter what code we try to build.

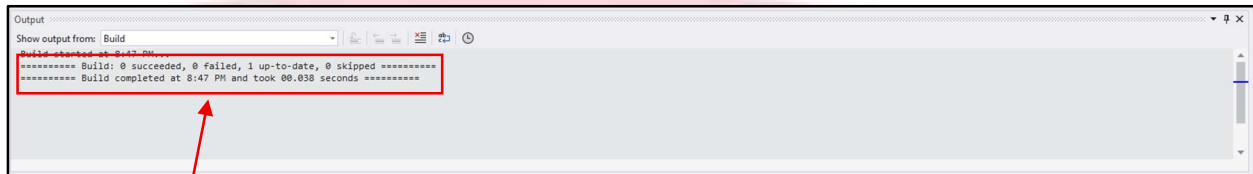
Solution

Fixing this issue requires the use of administrator rights (elevated rights) on all the computers. The SDK installation needs to be examined closer if it's the case that it's truly installed, but in another directory, otherwise the SDK installation needs to be redone completely.

Another possible solution would be to use another IDE that is installed on the computers, such as PyCharm, although some people might prefer the use of Visual Studio over PyCharm.

Proof

After realizing that the installation of VS on the computers in H-833 was questionable, I went to H-815 to test its installation of VS on their computers. The screenshots below show that with the same code and configuration, the build process is completed without any issues. In addition, I also ran the code that I wrote for my lab assignment without issues:



Build succeeded!

Figure 5: successful build output

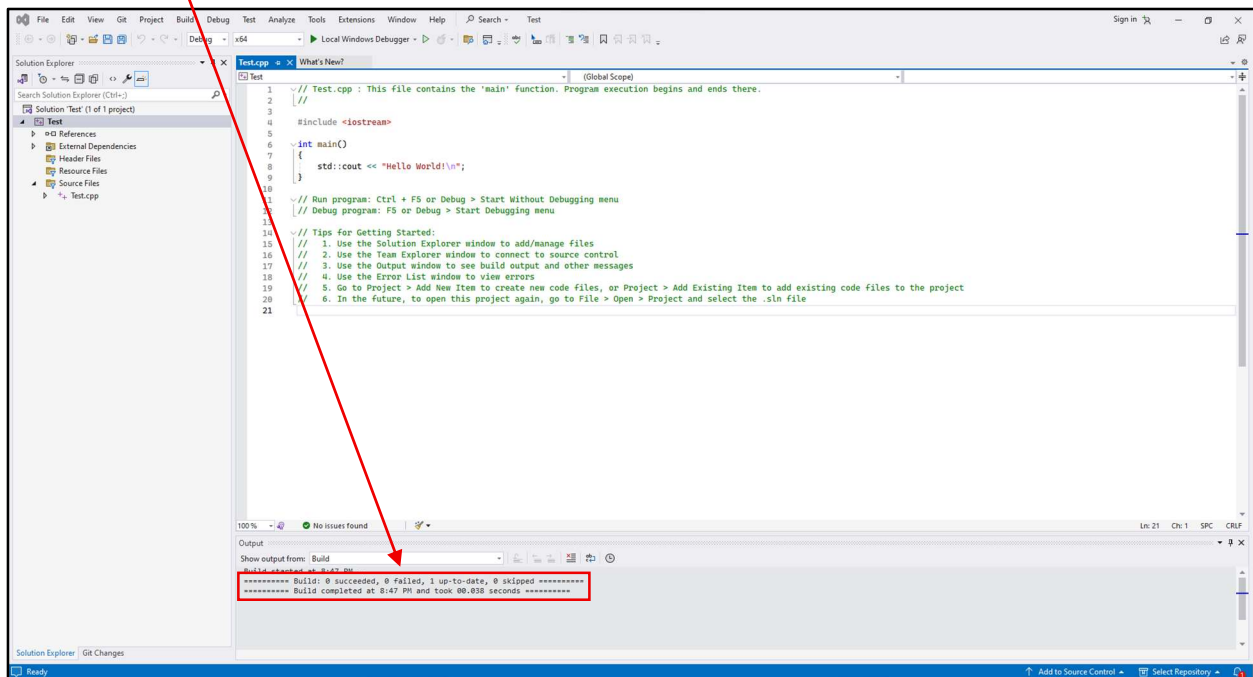
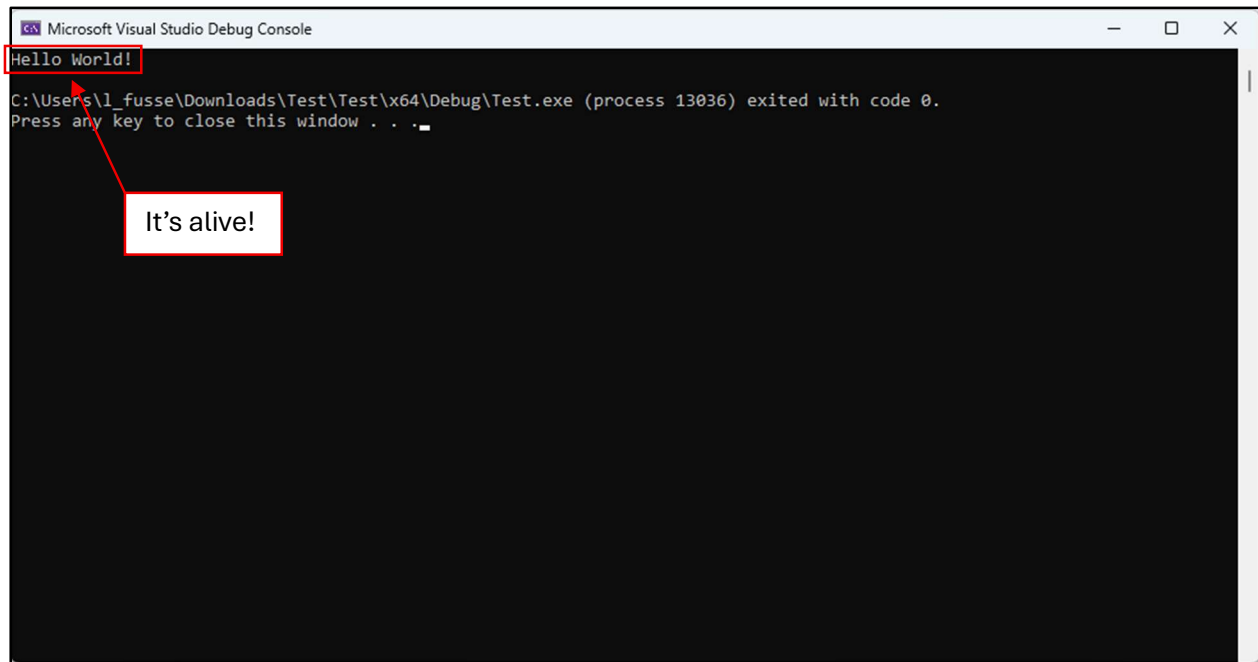


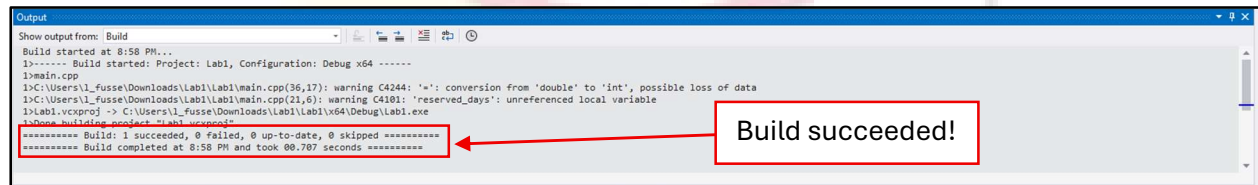
Figure 6: “Hello World” program from before



The screenshot shows the Microsoft Visual Studio Debug Console. The text "Hello World!" is displayed at the top, highlighted with a red box. Below it, the message "C:\Users\l_fusse\Downloads\Test\Test\x64\Debug\Test.exe (process 13036) exited with code 0. Press any key to close this window . . ." is visible. A red arrow points from the text "It's alive!" in a red box to the "Hello World!" output.

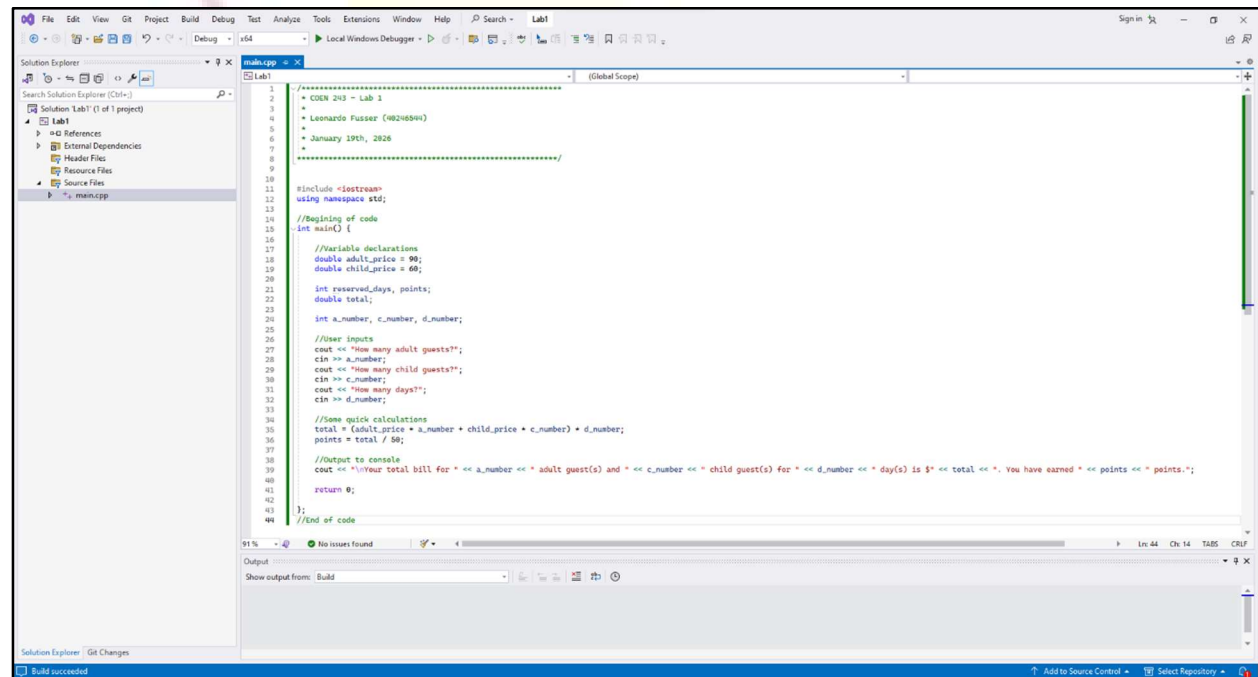
```
Microsoft Visual Studio Debug Console
Hello World!
C:\Users\l_fusse\Downloads\Test\Test\x64\Debug\Test.exe (process 13036) exited with code 0.
Press any key to close this window . . .
```

Figure 7: “Hello World” output on console



The screenshot shows the Visual Studio Output window. The text "Build succeeded!" is highlighted in a red box. The output text includes "Build started at 8:58 PM...", "Build completed at 8:58 PM and took 00.707 seconds", and "Build succeeded!". A red arrow points from the text "Build succeeded!" in a red box to the "Build succeeded!" output.

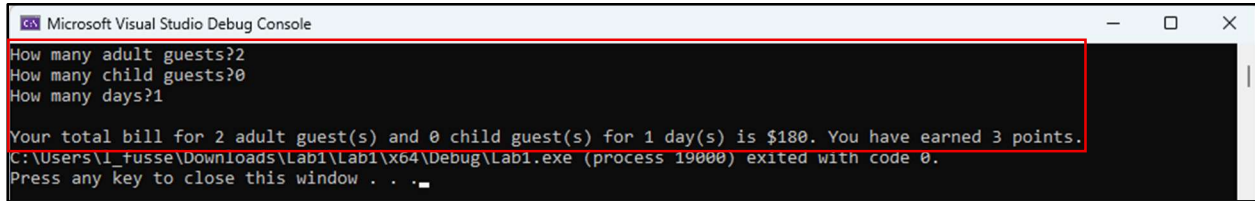
```
Output
Show output from: Build
Build started at 8:58 PM...
1>----- Build started: Project: Lab1, Configuration: Debug x64 -----
1>main.cpp
1>C:\Users\l_fusse\Downloads\Lab1\Lab1\main.cpp(36,17): warning C4244: 'a': conversion from 'double' to 'int', possible loss of data
1>C:\Users\l_fusse\Downloads\Lab1\Lab1\main.cpp(21,6): warning C4101: 'reserved_days': unreferenced local variable
1>Lab1.vcxproj -> C:\Users\l_fusse\Downloads\Lab1\Lab1\x64\Debug\Lab1.exe
1>Done building project "Lab1" successfully.
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 8:58 PM and took 00.707 seconds =====
Build succeeded!
```



The screenshot shows the Visual Studio IDE with the lab program code open in the main editor. The code is a C++ program that calculates the total bill for a reservation. The code includes comments and variable declarations. The output window at the bottom shows the build output, which is the same as the one in Figure 7.

```
1 //*****
2 // CODEN 243 - Lab 1
3 //
4 // Leonardo Fusser (40246544)
5 //
6 // January 19th, 2026
7 //
8 //*****
9
10
11 #include <iostream>
12 using namespace std;
13
14 //Beginning of code
15 int main() {
16
17     //Variable declarations
18     double adult_price = 90;
19     double child_price = 60;
20
21     int reserved_days, points;
22     double total;
23
24     int a_number, c_number, d_number;
25
26     //User inputs
27     cout << "How many adult guests?";
28     cin >> a_number;
29     cout << "How many child guests?";
30     cin >> c_number;
31     cout << "How many days?";
32     cin >> d_number;
33
34     //Some quick calculations
35     total = adult_price * a_number + child_price * c_number * d_number;
36     points = total / 50;
37
38     //Output to console
39     cout << "\nYour total bill for " << a_number << " adult guest(s) and " << c_number << " child guest(s) for " << d_number << " day(s) is $" << total << ". You have earned " << points << " points.";
40
41     return 0;
42 }
43
44 //End of code
```

Figure 8 & 9: lab program and build output



Microsoft Visual Studio Debug Console

```
How many adult guests?2
How many child guests?0
How many days?1

Your total bill for 2 adult guest(s) and 0 child guest(s) for 1 day(s) is $180. You have earned 3 points.
C:\Users\l_fusser\Downloads\Lab1\Lab1\Debug\Lab1.exe (process 19000) exited with code 0.
Press any key to close this window . . .
```

Figure 10: lab program output on console

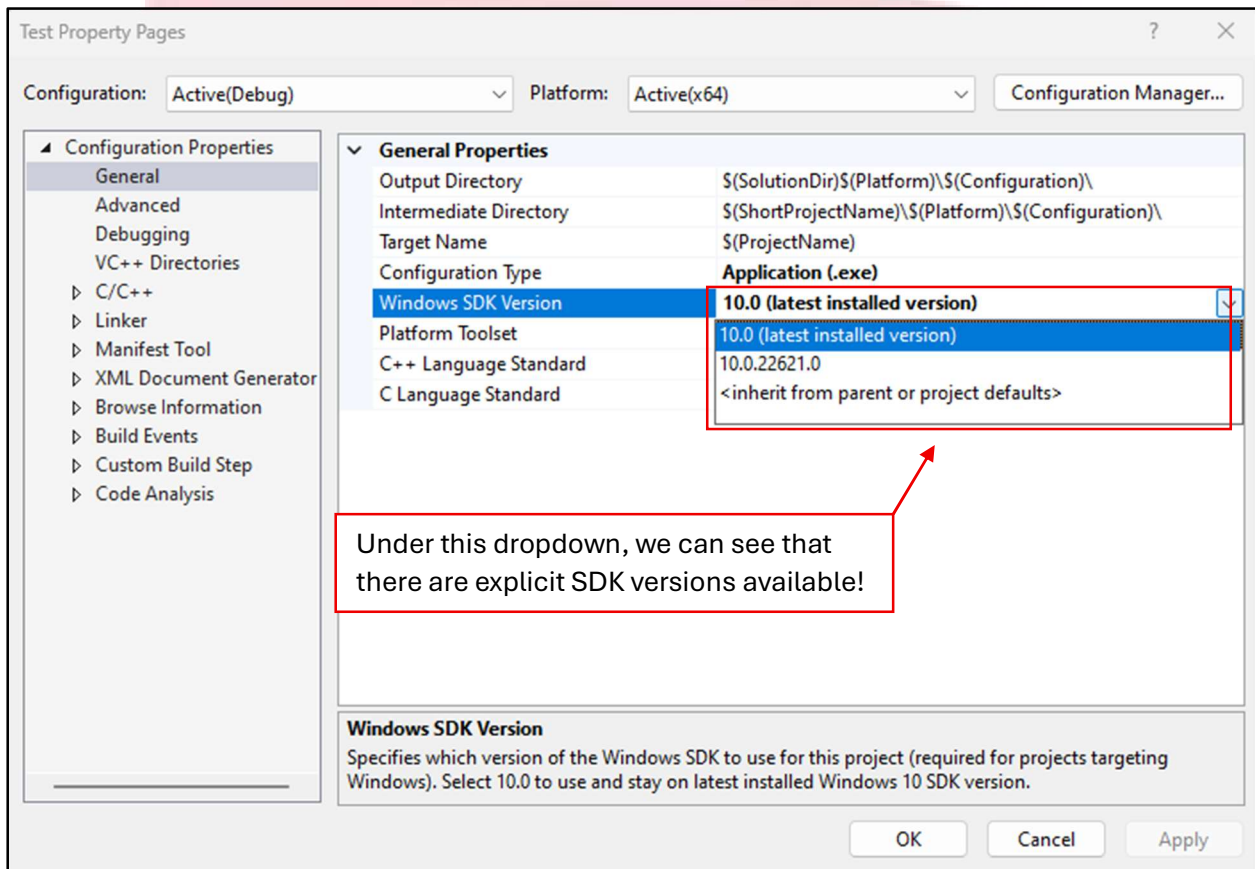


Figure 11: project properties window with proper SDK installation

Conclusion

The issue that I found with the installation of Visual Studio on the computers in H-833 is unrelated to the code being built or project structure. From my research, it is caused by a broken SDK installation on the computers, which prevents Visual Studio from correctly building code. Resolving this requires administrative intervention.

