

CSE-2010

Secure Coding(L23 + L24)

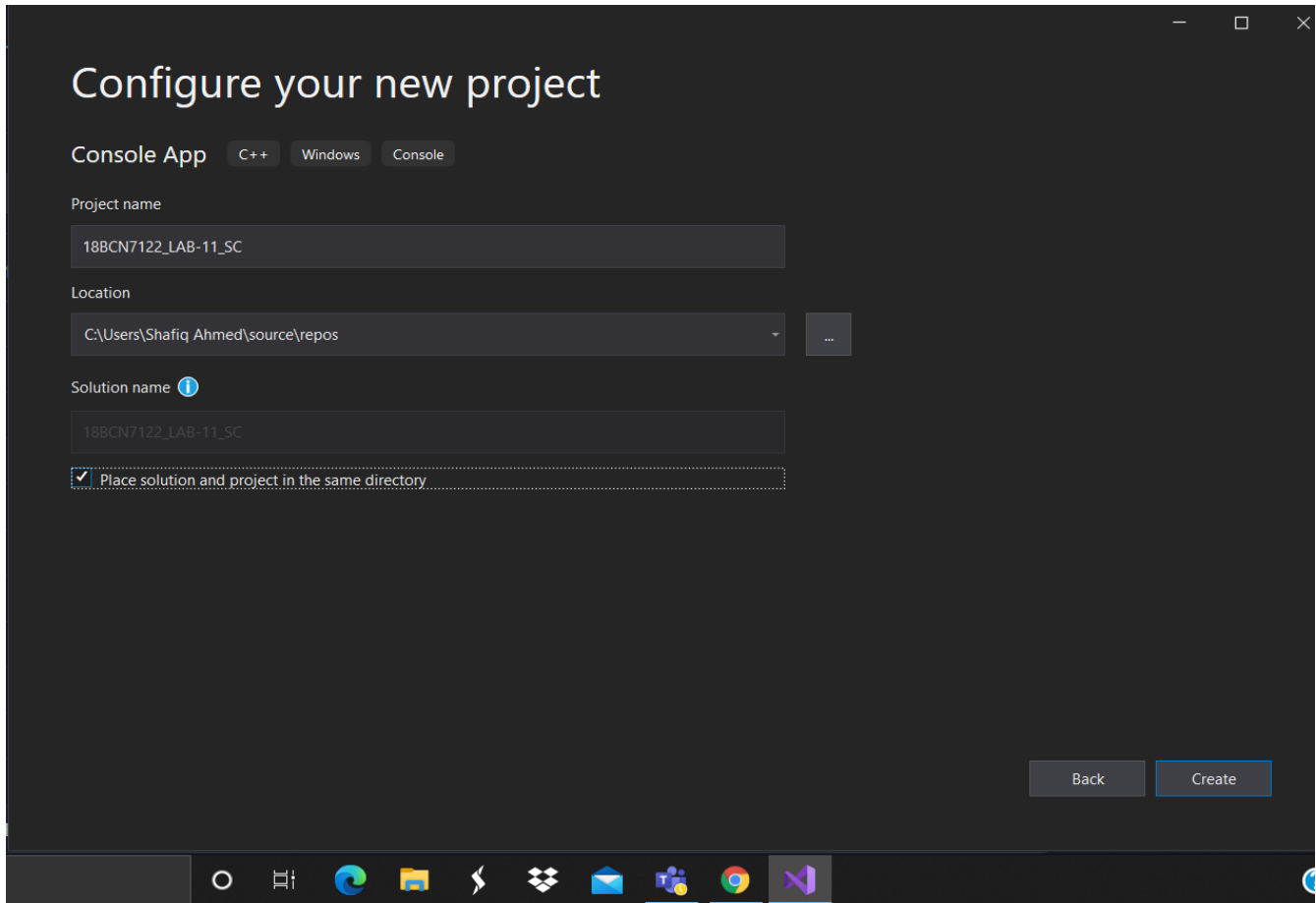


Lab - 11

Name :- MD Shafiq Ahmed

Reg no :- 18BCN7122

- Download and install visual studio (recent edition)



- Write a C++ code of your own to build an executable and run the same.

```
18BCN7122_SC.cpp [X]
18BCN7122_SC (Global Scope) main()

#include <iostream>
using namespace std;

int main() {
    char op;
    float num1, num2;

    cout << "Enter operator: +, -, *, /: ";
    cin >> op;

    cout << "Enter two operands: ";
    cin >> num1 >> num2;

    switch (op) {
        case '+':
            cout << num1 << " + " << num2 << " = " << num1 + num2;
            break;

        case '-':
            cout << num1 << " - " << num2 << " = " << num1 - num2;
            break;

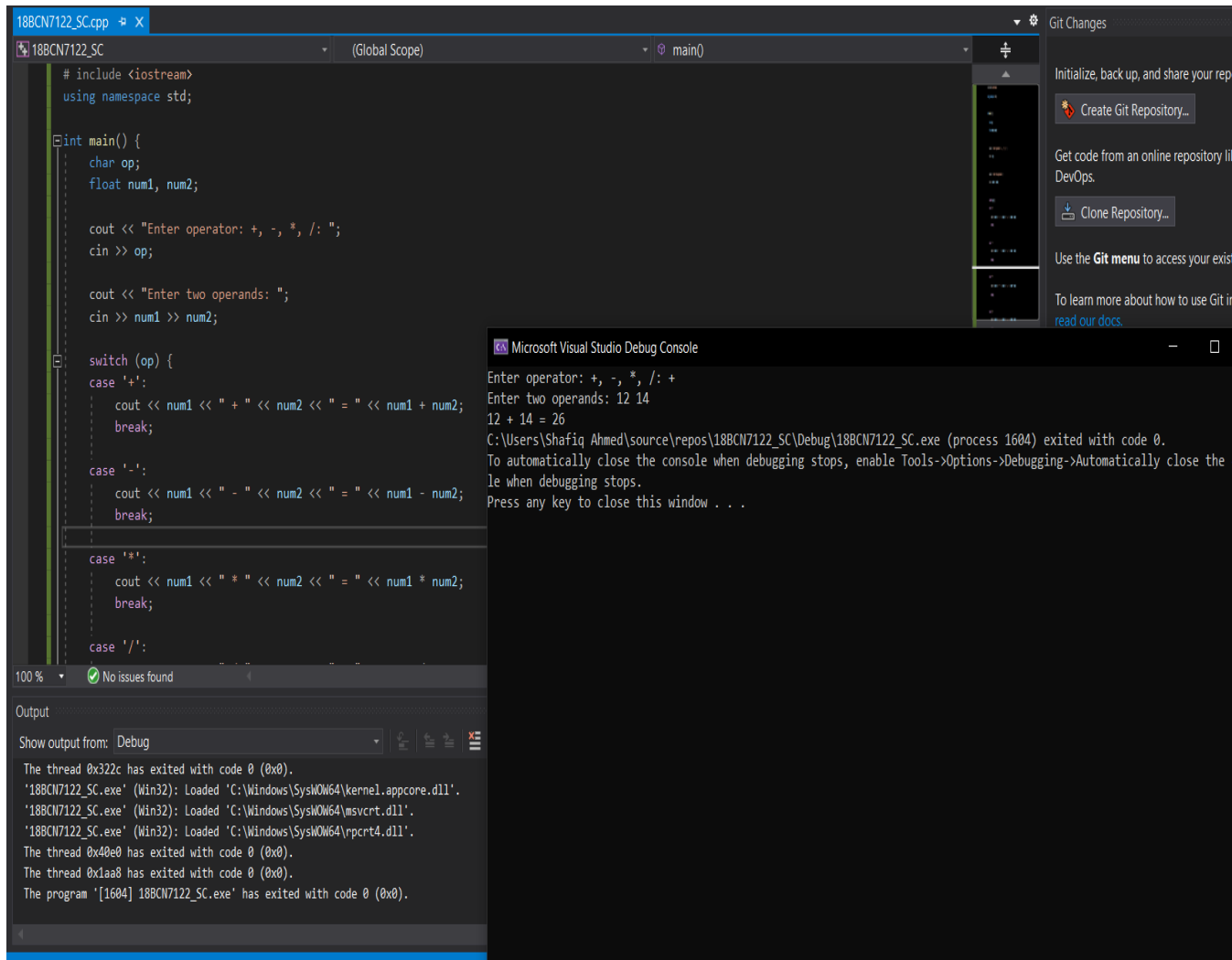
        case '*':
            cout << num1 << " * " << num2 << " = " << num1 * num2;
            break;

        case '/':
            cout << num1 << " / " << num2 << " = " << num1 / num2;
            break;

        default:
            // If the operator is other than +, -, * or /, error message is shown
            cout << "Error! operator is not correct";
            break;
    }

    return 0;
}
```

100 % No issues found Ln: 22 Ch: 9 SPC CRLF



- **Download process explorer and verify the DEP & ASLR status**

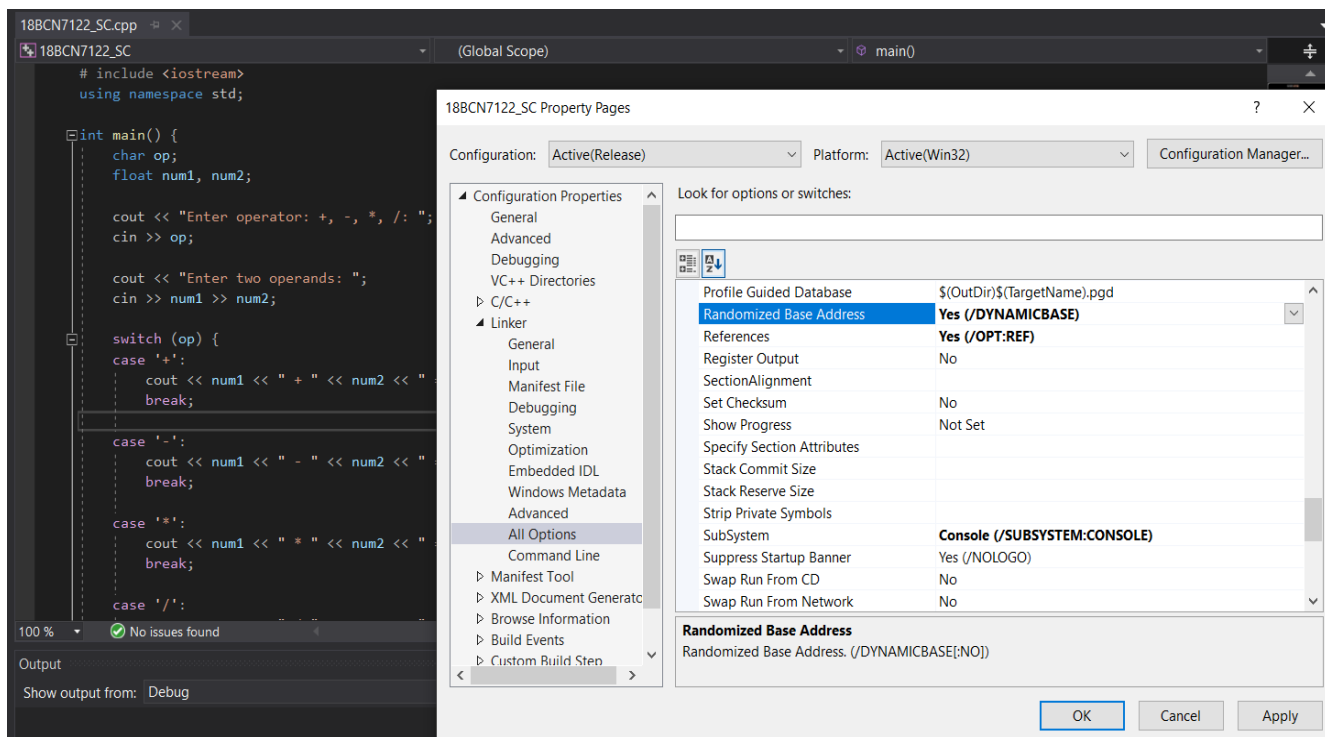
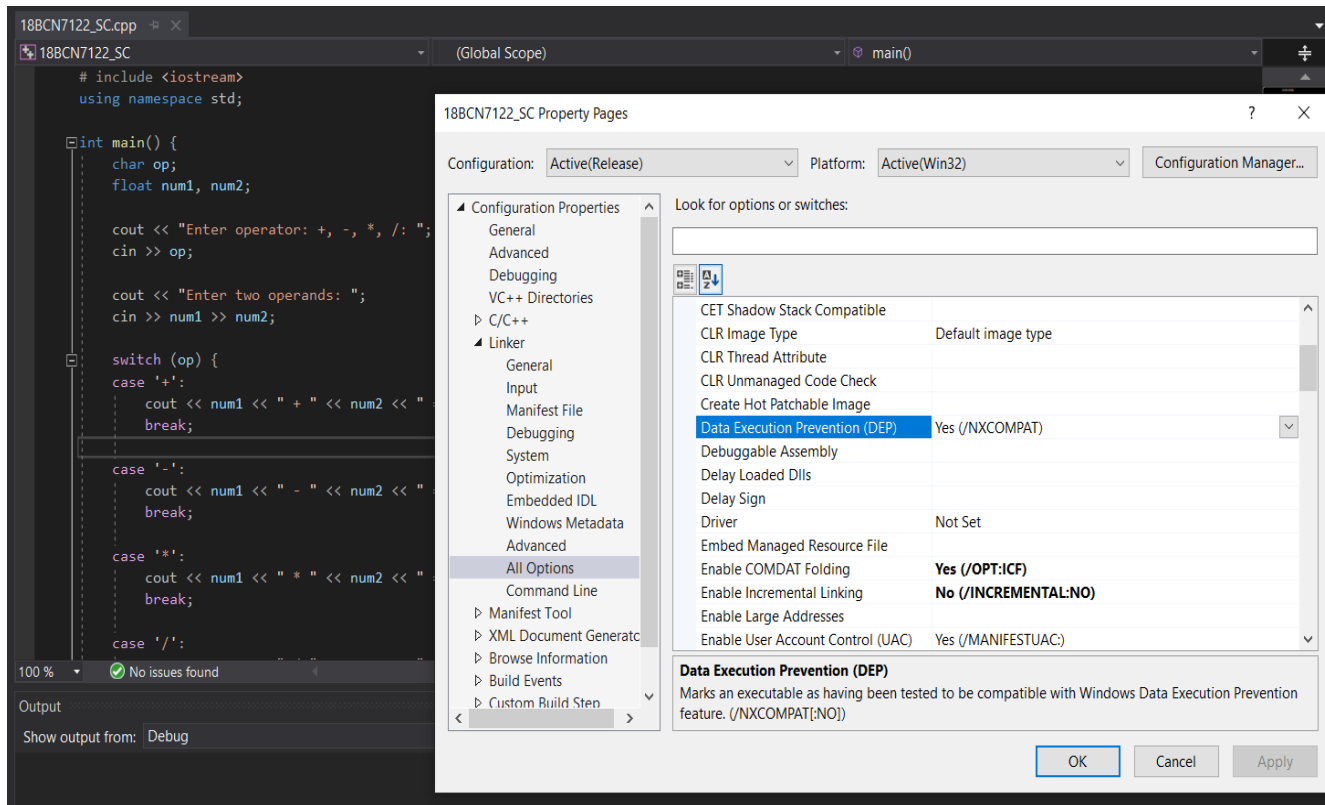
Process Explorer - Sysinternals: www.sysinternals.com [LAPTOP-G292I94R\Shafiq Ahmed]

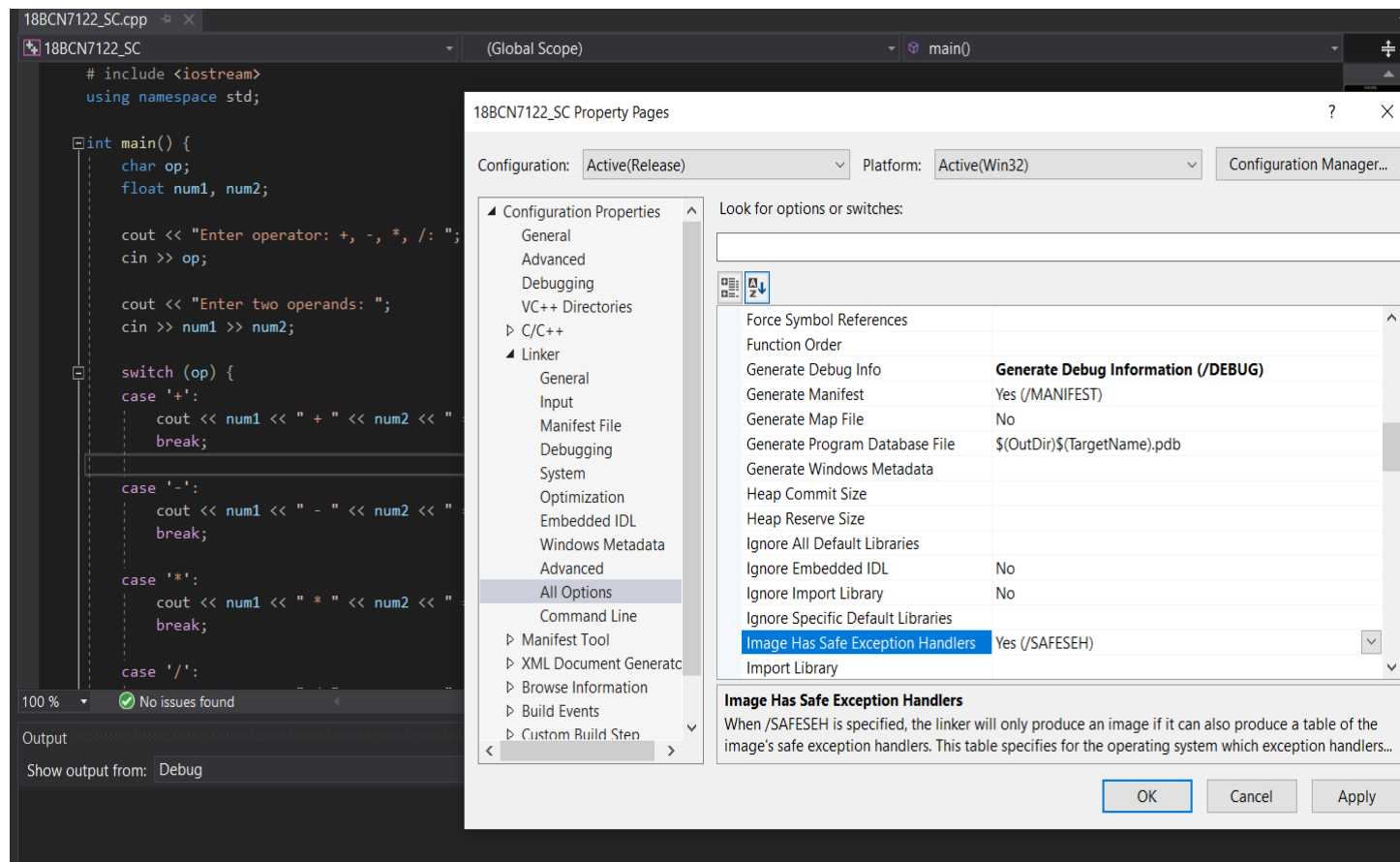
File Options View Process Find Users Help

Process	Working Set	PID	Description	Company Name	DEP	ASLR
chrome.exe	46,856 K	7248	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe	23,712 K	19184	Google Chrome	Google LLC	Enabled (permane...	ASLR
ciscowebexstart.exe	14,432 K	13740	Webex	Cisco Webex LLC	Enabled (permane...	ASLR
cmd.exe	3,920 K	17972	Windows Command Process...	Microsoft Corporation	Enabled (permane...	ASLR
cmd.exe	4,124 K	18120	Windows Command Process...	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe	7,476 K	18048	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe	7,480 K	18148	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe	10,868 K	9068	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe	16,604 K	3136	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
Cortana.exe	73,596 K	15300	Cortana	Microsoft Corporation	Enabled (permane...	ASLR
devenv.exe	4,87,028 K	4940	Microsoft Visual Studio 2019	Microsoft Corporation	Enabled (permane...	ASLR
DiagsCap.exe	6,532 K	2492		HP Inc.	n/a	ASLR
Discord.exe	58,132 K	14184	Discord	Discord Inc.	Enabled (permane...	ASLR
Discord.exe	22,784 K	13636	Discord	Discord Inc.	Enabled (permane...	ASLR
Discord.exe	58,540 K	13520	Discord	Discord Inc.	Enabled (permane...	ASLR
Discord.exe	34,324 K	13888	Discord	Discord Inc.	Enabled (permane...	ASLR
Discord.exe	1,36,736 K	14824	Discord	Discord Inc.	Enabled (permane...	ASLR
Discord.exe	56,796 K	16220	Discord	Discord Inc.	Enabled (permane...	ASLR
dllhost.exe	13,876 K	11684	COM Surrogate	Microsoft Corporation	Enabled (permane...	ASLR
dllhost.exe	7,320 K	4716	COM Surrogate	Microsoft Corporation	Enabled (permane...	ASLR
downloader2.exe	25,332 K	14660	RealDownloader		Enabled (permane...	ASLR
esif_uf.exe	6,012 K	5188	Intel(R) Dynamic Tuning Serv...	Intel Corporation	n/a	ASLR
ETDCtrl.exe	21,556 K	9308	ETD Control Center	ELAN Microelectronics Corp.	Enabled (permane...	ASLR
ETDService.exe	5,768 K	3472	Elan Service	ELAN Microelectronics Corp.	n/a	ASLR
ETDTouch.exe	5,692 K	10068	ETDTouch	ELAN Microelectronics Corp.	Enabled (permane...	ASLR
explorer.exe	1,48,920 K	10168	Windows Explorer	Microsoft Corporation	Enabled (permane...	ASLR
FileCoAuth.exe	22,900 K	1680	Microsoft OneDriveFile Co-A...	Microsoft Corporation	Enabled (permane...	ASLR
HP.JumpStarts.exe	2,496 K	11560	HP.JumpStarts	HP Inc.	Enabled (permane...	ASLR
HPAudioSwitch.exe	39,848 K	16984	HPAudioSwitch	HP Inc.	Enabled (permane...	ASLR
HPCommRecovery.exe						

CPU Usage: 15.17% Commit Charge: 61.86% Processes: 274 Physical Usage: 49.09%

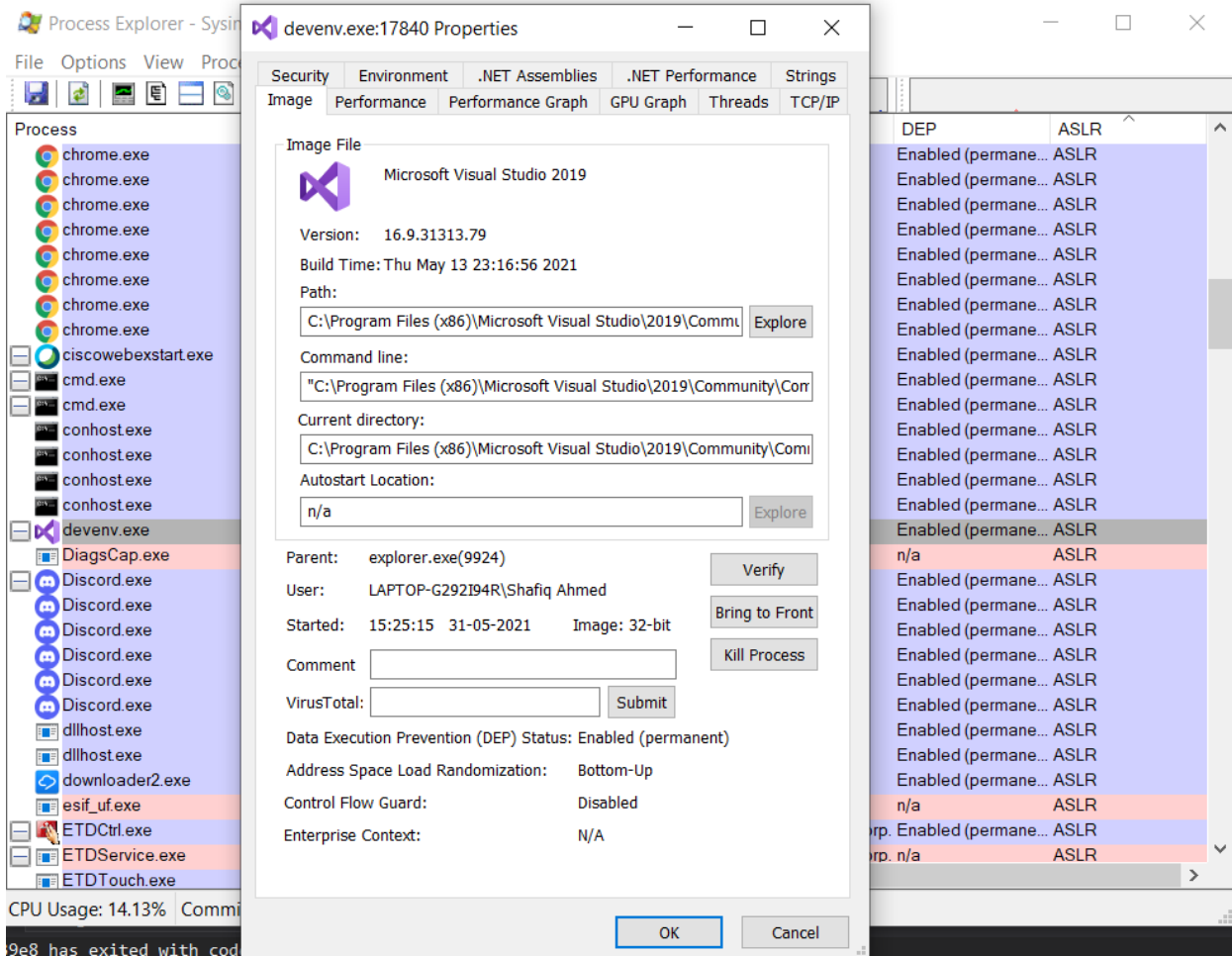
- Enable software DEP, ASLR and SEH in the visual studio and rebuild the same executable





- Again, verify the DEP & ASLR status in the process explorer

Process	Working Set	PID	Description	Company Name	DEP	ASLR
chrome.exe	51,620 K	13076	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe	1,71,132 K	11340	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe	19,412 K	18320	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe	2,60,264 K	16156	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe	96,400 K	3540	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe	3,01,228 K	10464	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe	15,816 K	11188	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe	92,596 K	5156	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe	23,712 K	17740	Google Chrome	Google LLC	Enabled (permane...	ASLR
ciscoverbexstart.exe	14,916 K	13768	Webex	Cisco Webex LLC	Enabled (permane...	ASLR
cmd.exe	3,868 K	9688	Windows Command Process...	Microsoft Corporation	Enabled (permane...	ASLR
cmd.exe	3,876 K	11684	Windows Command Process...	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe	7,784 K	11672	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe	7,712 K	11720	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe	10,780 K	12076	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe	16,516 K	6988	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
devenv.exe	4,77,824 K	17840	Microsoft Visual Studio 2019	Microsoft Corporation	Enabled (permane...	ASLR
DiagsCap.exe	6,624 K	2448		HP Inc.	n/a	ASLR
Discord.exe	61,008 K	15216	Discord	Discord Inc.	Enabled (permane...	ASLR
Discord.exe	22,988 K	15136	Discord	Discord Inc.	Enabled (permane...	ASLR
Discord.exe	60,688 K	15380	Discord	Discord Inc.	Enabled (permane...	ASLR
Discord.exe	35,284 K	15472	Discord	Discord Inc.	Enabled (permane...	ASLR
Discord.exe	1,37,584 K	16296	Discord	Discord Inc.	Enabled (permane...	ASLR
Discord.exe	57,844 K	16736	Discord	Discord Inc.	Enabled (permane...	ASLR
dllhost.exe	13,592 K	10920	COM Surrogate	Microsoft Corporation	Enabled (permane...	ASLR
dllhost.exe	7,344 K	17836	COM Surrogate	Microsoft Corporation	Enabled (permane...	ASLR
downloader2.exe	33,772 K	16916	RealDownloader		Enabled (permane...	ASLR
esif_uf.exe	5,812 K	5212	Intel(R) Dynamic Tuning Serv...	Intel Corporation	n/a	ASLR
ETDCtrl.exe	21,092 K	5020	ETD Control Center	ELAN Microelectronics Corp.	Enabled (permane...	ASLR
ETDService.exe						



Process Explorer - Sysinternals: www.sysinternals.com [LAPTOP-G292I94R\Shafiq Ahmed]

File Options View Process

Process

- svchost.exe
- svchost.exe
- svchost.exe
- svchost.exe
- svchost.exe
- svchost.exe
- svchost.exe
- SysInfoCap.exe
- SystemSettings.exe
- taskhostw.exe
- Teams.exe
- Teams.exe
- Teams.exe
- Teams.exe
- Teams.exe
- Teams.exe
- Teams.exe
- Teams.exe
- Teams.exe
- Teams.exe
- TextInputHost.exe
- TouchpointAnalyticsCli...
- transport_proxy.exe
- unsecapp.exe
- UserOOBEBroker.exe
- Video.UI.exe
- VsDebugConsole.exe
- vstest.console.exe
- WildTangentHelperSer...
- WinRAR.exe
- WinStore.App.exe

CPU Usage: 17.82% Commit

VsDebugConsole.exe:15452 Properties

Threads TCP/IP Security Environment Strings
Image Performance Performance Graph GPU Graph

Image File

Visual Studio Debugger Console Application Resources

Version: 16.9.20331.5
Build Time: Wed Mar 31 23:29:50 2021
Path: C:\Program Files (x86)\Microsoft Visual Studio\2019\Commu Explore
Command line: "C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\Corr
Current directory: C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\Comi
Autostart Location: n/a Explore

Parent: devenv.exe(17840) Verify
User: LAPTOP-G292I94R\Shafiq Ahmed Bring to Front
Started: 15:58:03 31-05-2021 Image: 32-bit Kill Process
Comment
VirusTotal: Submit

Data Execution Prevention (DEP) Status: Enabled (permanent)
Address Space Load Randomization: Bottom-Up
Control Flow Guard: Disabled
Enterprise Context: N/A

DEP ASLR
Enabled (permane... ASLR
n/a ASLR
n/a ASLR
n/a ASLR
n/a ASLR
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n/a ASLR
Enabled (permane... ASLR
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OK Cancel

