

# Lab-11

P.Aravind  
18BCE7256

## Q) Creating secure and safe executable

### 1) C++ Code & building the Executable

```
#include <iostream>

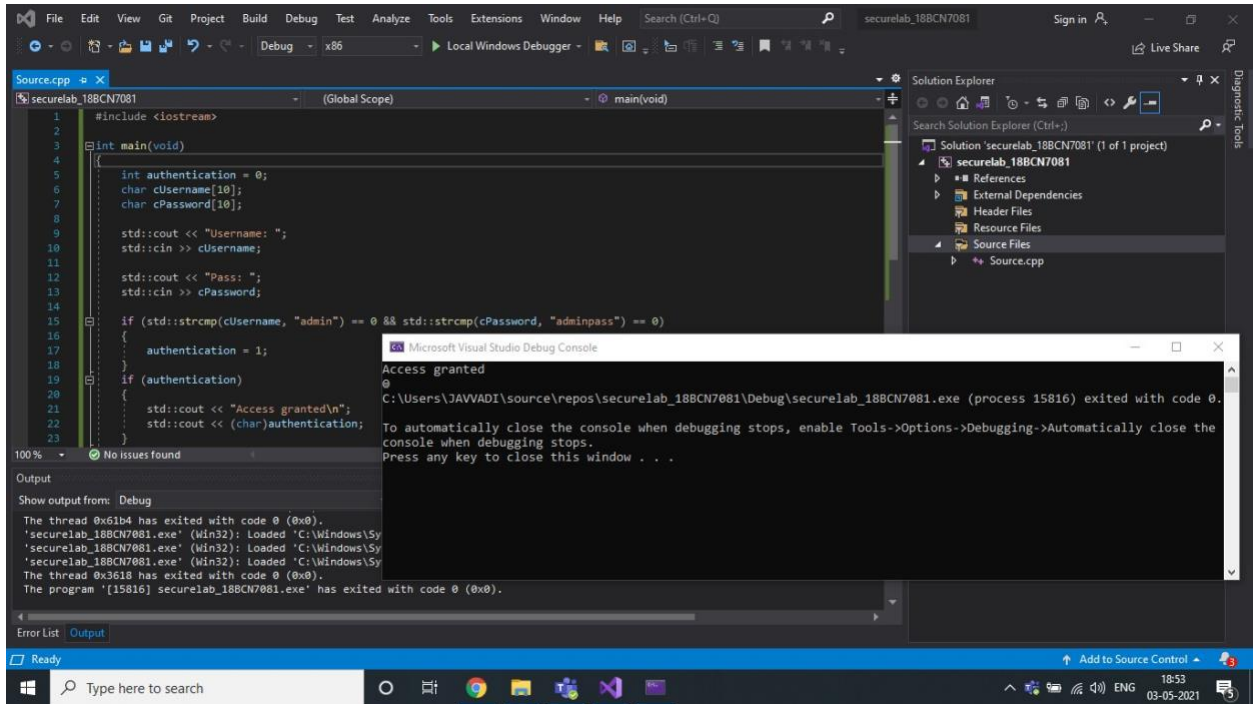
int main(void) { int
authentication = 0; char
cUsername[10]; char
cPassword[10];

    std::cout << "Username: ";
    std::cin >> cUsername;

    std::cout << "Pass: ";
    std::cin >> cPassword;

    if (std::strcmp(cUsername, "admin") == 0 &&
std::strcmp(cPassword, "adminpass") == 0)
    { authentication = 1;
    } if (authentication) { std::cout <<
"Access granted\n"; std::cout <<
(char)authentication;
    } else { std::cout << "Wrong username and
password\n";
    } return

    (0); }
```



## 2) Verifying the DEP & ASLR status in Process Explorer

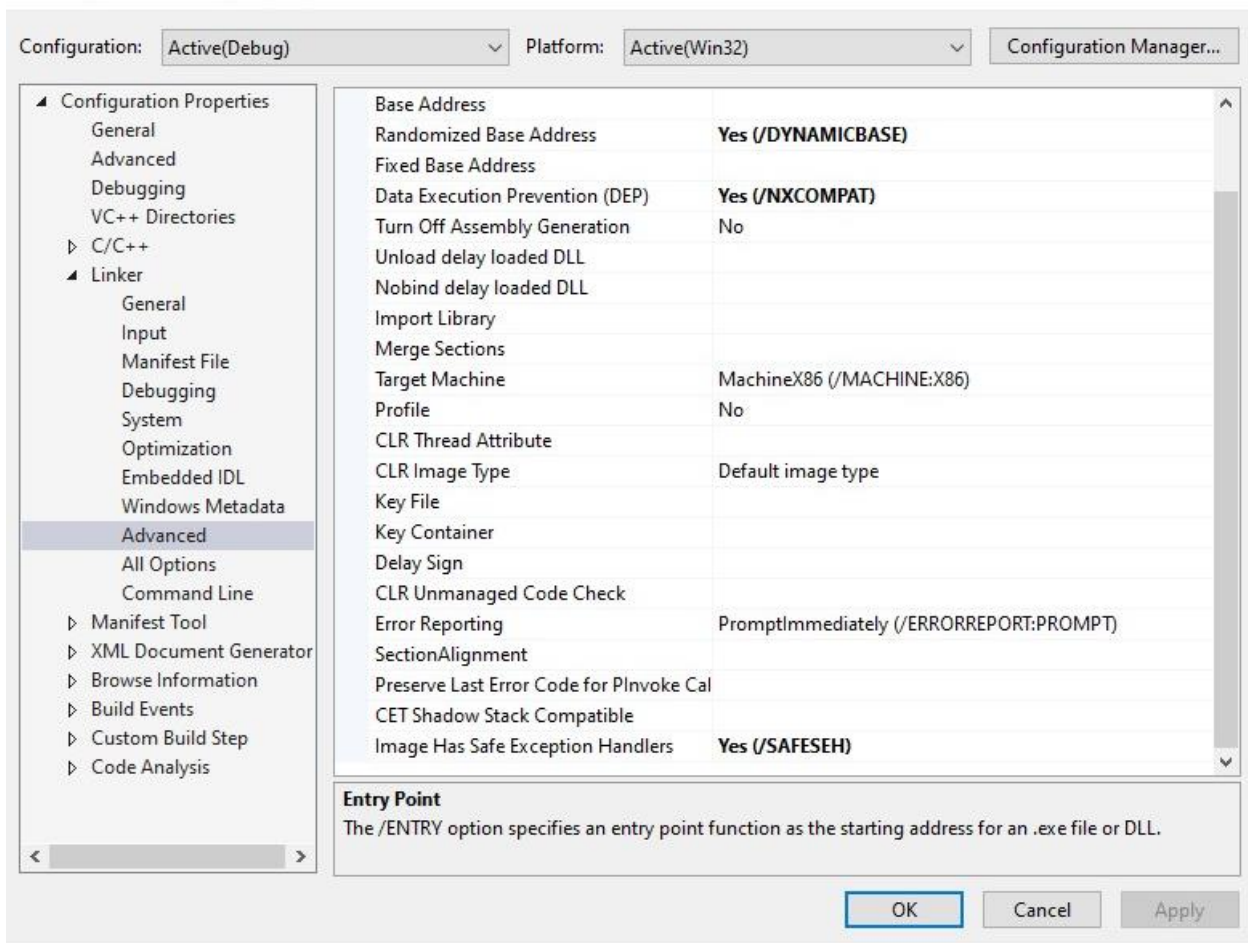
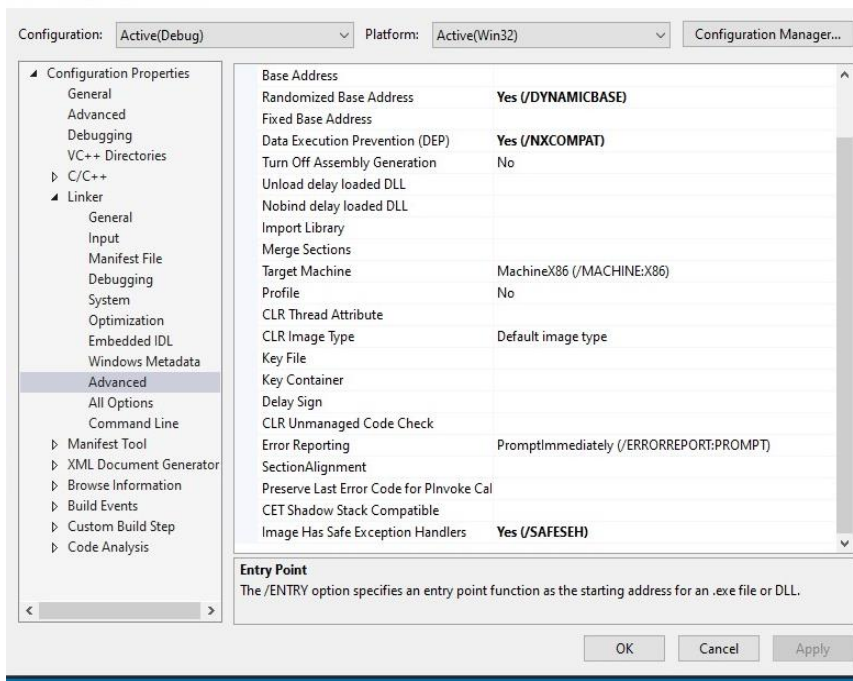
Process Explorer - Sysinternals: www.sysinternals.com [DESKTOP-H17TJRC\JAVVADI]

Process	CPU	Private Bytes	Working Set	PID	Description	Company Name	DEP	ASLR
ServiceHub.TestWindow...	< 0.01	57,280 K	69,780 K	18220	ServiceHub.TestWindowSto...	Microsoft	Enabled (permane...	ASLR
MSBuild.exe		27,728 K	45,516 K	24684	MSBuild.exe	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe		6,332 K	11,248 K	2012	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
vcpkgshr.exe	< 0.01	15,084 K	20,888 K	8484	Microsoft (R) Visual C++ Pac...	Microsoft Corporation	Enabled (permane...	
vcpkgshr.exe	< 0.01	43,112 K	17,004 K	25328	Microsoft (R) Visual C++ Pac...	Microsoft Corporation	Enabled (permane...	
VsDebugConsole.exe		1,116 K	6,400 K	23792	Visual Studio Debugger Con...	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe		8,332 K	18,072 K	9728	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
securelab_18BCN7081.exe		676 K	4,820 K	15020			Disabled (perman...	
msvsmmon.exe		9,664 K	20,144 K	20340	Visual Studio 2019 Remote ...	Microsoft Corporation	Enabled (permane...	ASLR
ScriptedSandbox64.exe	1.62	88,052 K	1,17,456 K	16348	ScriptedSandbox64.exe	Microsoft Corporation	Enabled (permane...	ASLR
mspdbsrv.exe		16,212 K	18,272 K	20644	Microsoft® Program Database	Microsoft Corporation	Enabled (permane...	ASLR

CPU Usage: 24.01% Commit Charge: 84.13% Processes: 226 Physical Usage: 80.30%

You can see DEP disabled & No ASLR.

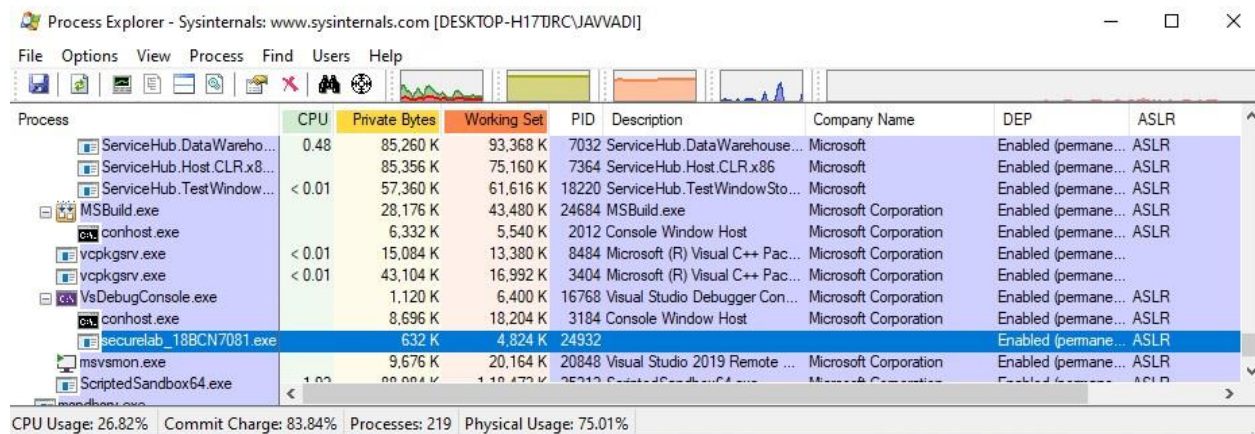
### 3) Rebuilding the same executable After enabling DEP & ASLR



As you can see, I have enabled DEP, ASLR, SEH above.

I have Rebuilt my project and run the same and we can verify the status of DEP, ASLR, SEH.

#### 4) Verifying the DEP & ASLR status in Process Explorer after enabling



The screenshot shows the Process Explorer window from Sysinternals. The 'Process' tab is active, displaying a list of running processes. The columns shown are Process, CPU, Private Bytes, Working Set, PID, Description, Company Name, DEP, and ASLR. The DEP and ASLR columns show the status for each process, with 'Enabled (permane...)' indicating that both are enabled. The processes listed include ServiceHub.DataWareho..., ServiceHub.Host.CLR.x8..., ServiceHub.TestWindow..., MSBuild.exe, conhost.exe, vcpkgshr.exe, vcpkgshr.exe, VsDebugConsole.exe, conhost.exe, securelab\_18BCN7081.exe, msxmon.exe, and ScriptedSandbox64.exe. The status bar at the bottom shows CPU Usage: 26.82%, Commit Charge: 83.84%, Processes: 219, and Physical Usage: 75.01%.

Process	CPU	Private Bytes	Working Set	PID	Description	Company Name	DEP	ASLR
ServiceHub.DataWareho...	0.48	85,260 K	93,368 K	7032	ServiceHub.DataWarehouse...	Microsoft	Enabled (permane...	ASLR
ServiceHub.Host.CLR.x8...		85,356 K	75,160 K	7364	ServiceHub.Host.CLR.x86	Microsoft	Enabled (permane...	ASLR
ServiceHub.TestWindow...	< 0.01	57,360 K	61,616 K	18220	ServiceHub.TestWindowSto...	Microsoft	Enabled (permane...	ASLR
MSBuild.exe		28,176 K	43,480 K	24684	MSBuild.exe	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe		6,332 K	5,540 K	2012	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
vcpkgshr.exe	< 0.01	15,084 K	13,380 K	8484	Microsoft (R) Visual C++ Pac...	Microsoft Corporation	Enabled (permane...	
vcpkgshr.exe	< 0.01	43,104 K	16,992 K	3404	Microsoft (R) Visual C++ Pac...	Microsoft Corporation	Enabled (permane...	
VsDebugConsole.exe		1,120 K	6,400 K	16768	Visual Studio Debugger Con...	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe		8,696 K	18,204 K	3184	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
securelab_18BCN7081.exe		632 K	4,824 K	24932			Enabled (permane...	ASLR
msxmon.exe		9,676 K	20,164 K	20848	Visual Studio 2019 Remote ...	Microsoft Corporation	Enabled (permane...	ASLR
ScriptedSandbox64.exe	< 1.00	88,004 K	1,18,472 K	25312	ScriptedSandbox64.exe	Microsoft Corporation	Enabled (permane...	ASLR

CPU Usage: 26.82% Commit Charge: 83.84% Processes: 219 Physical Usage: 75.01%