

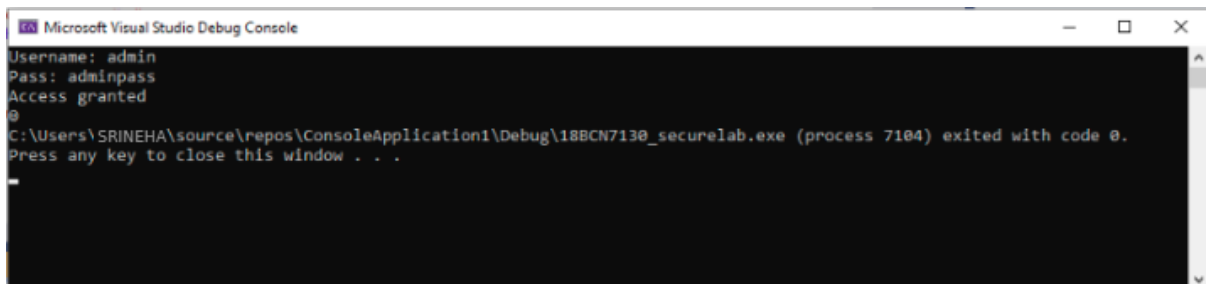
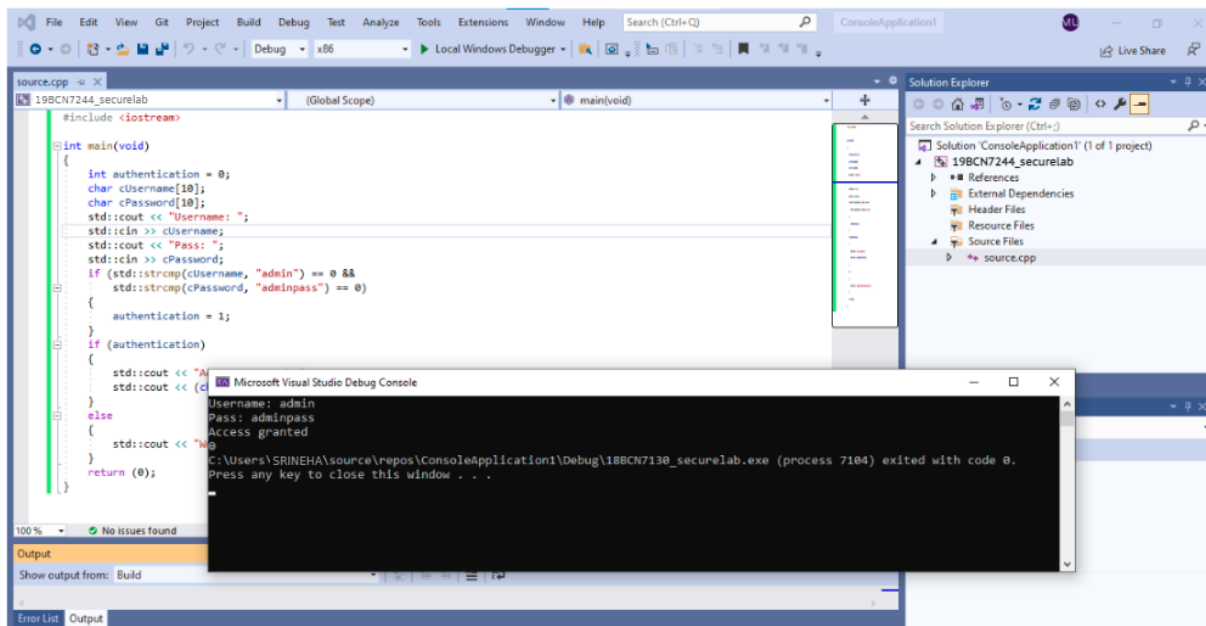
SECURE CODING LAB - 11

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19BCN7244

Lab experiment – 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)
    {
    }
    else
    {
    }
    std::cout << "Access granted\n";
    std::cout << (char)authentication;
    std::cout << "Wrong username and password\n";
    return (0);
}
```

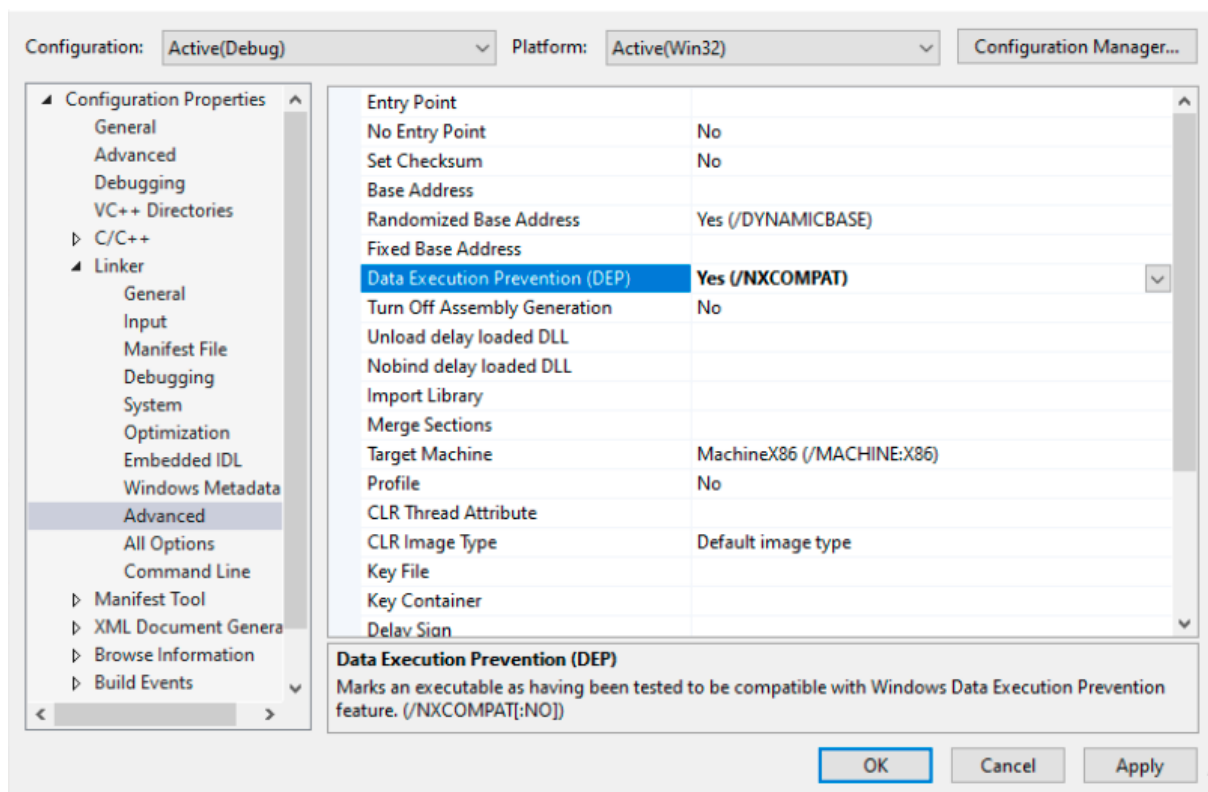
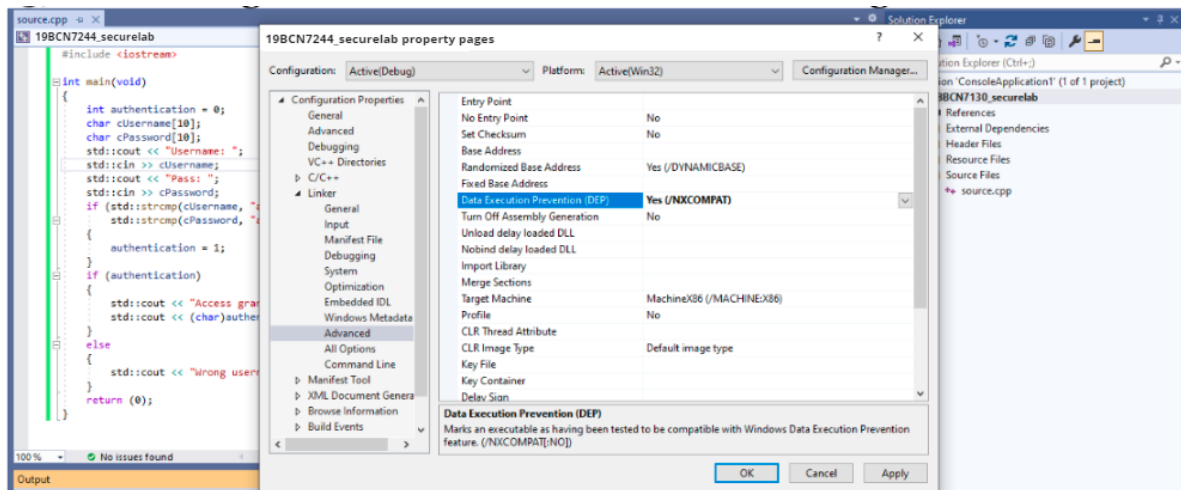


2) Verifying the DEP & ASLR status in Process Explorer

vcpkgsvr.exe	< 0.01	43,024 K	19,028 K	9988 Microsoft (R) Visual ...	Microsoft Corporation
MSBuild.exe		28,612 K	43,636 K	13444 MSBuild.exe	Microsoft Corporation
conhost.exe		6,492 K	11,060 K	20152 Console Window Host	Microsoft Corporation
VsDebugConsole.exe		1,236 K	6,136 K	5968 Visual Studio Debug...	Microsoft Corporation
conhost.exe		7,188 K	16,284 K	5072 Console Window Host	Microsoft Corporation
19BCN7244_securela...		780 K	4,496 K	19128	
msedge.exe	< 0.01	44,000 K	86,880 K	16884 Microsoft Edge	Microsoft Corporation
msedge.exe		6,504 K	7,484 K	17008 Microsoft Edge	Microsoft Corporation

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

source.cpp

```
#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
    {
    }
}
```

Process Explorer - Sysinternals: www.sysinternals.com [LAPTOP-OT4D0VC\MOUNIKA]

Process	CPU	Private Bytes	Working Set	PID	Description	Company Name
ServiceHub.Setting...	72.348 K	1,00,844 K	9072	ServiceHub Setting...	Microsoft	
ServiceHub.Identity...	< 0.01	56,844 K	74,672 K	19444	ServiceHub Identity...	Microsoft
ServiceHub.Host...	< 0.01	64,020 K	84,324 K	19064	ServiceHub Host C...	Microsoft
ServiceHub.Host...		64,468 K	69,016 K	18824	ServiceHub Host C...	Microsoft
ServiceHub.Host...		48,596 K	59,128 K	3140	ServiceHub Host C...	Microsoft
ServiceHub.TestW...		56,744 K	70,648 K	13428	ServiceHub TestW...	Microsoft
vcpgkgsrv.exe	< 0.01	10,080 K	15,924 K	10200	Microsoft (R) Visual...	Microsoft Corporation
vcpgkgsrv.exe	< 0.01	42,988 K	19,432 K	5048	Microsoft (R) Visual...	Microsoft Corporation
MSBuild.exe		28,560 K	43,696 K	11572	MSBuild.exe	Microsoft Corporation
conhost.exe		6,492 K	11,032 K	2760	Console Window Host	Microsoft Corporation
VsDebugConsole.exe		1,252 K	6,136 K	15840	Visual Studio Debug...	Microsoft Corporation
conhost.exe	0.16	8,204 K	17,016 K	8468	Console Window Host	Microsoft Corporation
19BCN7244_securelab		792 K	4,496 K	29544		
processp.exe		4,644 K	11,516 K	19016	Sysinternals Proces...	Sysinternals - www.sysintern...
processp64.exe	2.69	40,712 K	62,348 K	19668	Sysinternals Proces...	Sysinternals - www.sysintern...
UI.exe	0.32	32,504 K	27,308 K	12384	Avast Antivirus	AVAST Software
avastui.exe		19,200 K	5,712 K	19916	Avast Antivirus	AVAST Software
avastui.exe		11,808 K	5,148 K	19952	Avast Antivirus	AVAST Software
avastui.exe		13,984 K	6,092 K	19972	Avast Antivirus	AVAST Software
msi.exe	< 0.01	1,74,696 K	1,49,732 K	12704	Microsoft Teams	Microsoft Corporation

Output

Username: