

Secure Coding Lab-11

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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);
}
```

```
#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 << (cUsername & cPassword);
```

```
    }
```

```
    else
```

```
    {
```

```
        std::cout << "Wrong username or password\n";
```

```
    }
```

```
}
```

Microsoft Visual Studio Debug Console

Username: admin

Pass: adminpass

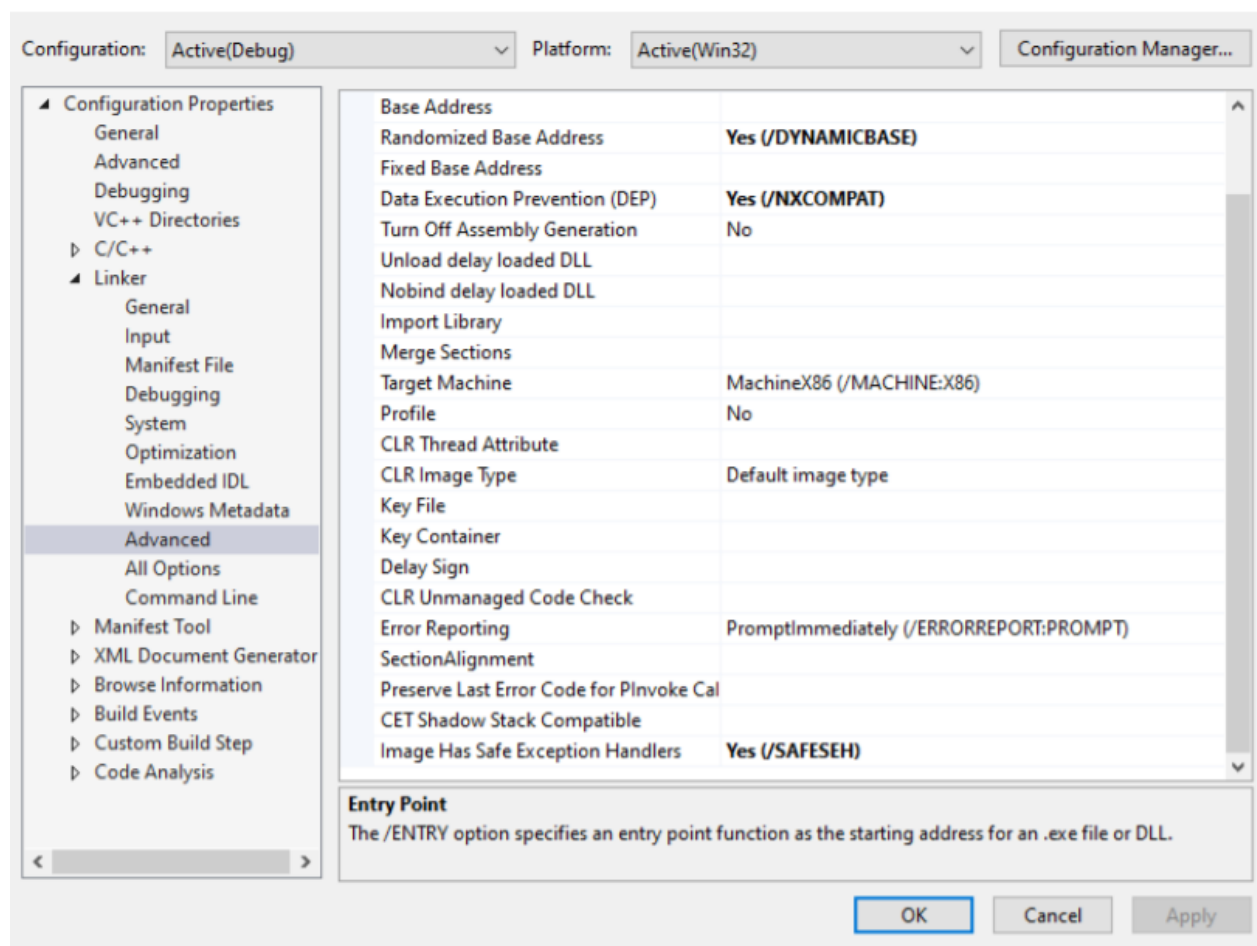
Access granted

Ⓜ

2) Verifying the DEP & ASLR status in Process Explorer

File Options View Process Find DLL Users Help								
Process	CPU	Private Bytes	Working Set	PID	Description	Company Name	DEP	ASLR
chrome.exe	4.87	1,22,756 K	1,50,116 K	12692	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe		17,576 K	41,736 K	11912	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe		14,888 K	25,596 K	10976	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe		41,236 K	90,828 K	2320	Google Chrome	Google LLC	Enabled (permane...	ASLR
chrome.exe		16,932 K	34,692 K	15044	Google Chrome	Google LLC	Enabled (permane...	ASLR
GameLibraryAppService.exe		25,596 K	34,636 K	18924	GameLibrary.AppService	Dell Technologies	Enabled (permane...	ASLR
Dell.D3 WinSvc.exe		1,19,608 K	32,424 K	8148	Dell.D3 WinSvc		n/a	ASLR
DDVRulesProcessor.exe		6,672 K	16,708 K	15788	Dell Data Vault Rules Proces...	Dell Technologies Inc.	n/a	ASLR
DDVCollectorSvcApi.exe		1,944 K	8,532 K	7348	Dell Data Vault Data Collecto...	Dell Technologies Inc.	n/a	ASLR
DDVDataCollector.exe		25,944 K	23,308 K	17364	Dell Data Vault Data Collecto...	Dell Technologies Inc.	n/a	ASLR
nvapiw.exe		4,380 K	10,960 K	18940	DDV Nvidia Graphics Worker	Dell Technologies Inc.	Enabled (permane...	ASLR
DellSupportAssistRemediationS...	< 0.01	67,852 K	36,832 K	2768	DCFWinService	Dell INC.	n/a	ASLR
Cortana.exe	Susp...	30,664 K	59,788 K	1592	Cortana	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe		6,328 K	1,416 K	9232	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
conhost.exe		6,316 K	10,732 K	20456	Console Window Host	Microsoft Corporation	Enabled (permane...	ASLR
CompPkgSrv.exe		1,288 K	7,032 K	2936	Component Package Suppor...	Microsoft Corporation	Enabled (permane...	ASLR
dllhost.exe		5,624 K	14,572 K	11776	COM Surrogate	Microsoft Corporation	Enabled (permane...	ASLR
dllhost.exe		1,840 K	7,660 K	760	COM Surrogate	Microsoft Corporation	Enabled (permane...	ASLR
AWCC.Service.exe		57,048 K	37,752 K	2608	AWCC.Service	Dell Technologies	n/a	ASLR
AWCC.Background.Server.exe		37,052 K	57,836 K	11172	AWCC.Background.Server	Dell Technologies	Enabled (permane...	ASLR
AWCC.exe	< 0.01	34,988 K	95,932 K	16120	AWCC	Dell Technologies	Enabled (permane...	ASLR
ApplicationFrameHost.exe		25,236 K	44,872 K	10588	Application Frame Host	Microsoft Corporation	Enabled (permane...	ASLR
MsMpEng.exe	< 0.01	2,85,284 K	2,56,760 K	20004	Antimalware Service Executa...	Microsoft Corporation	n/a	ASLR
TextInputHost.exe	0.19	13,340 K	49,872 K	15620		Microsoft Corporation	Enabled (permane...	ASLR
WUDFHost.exe		7,752 K	16,192 K	3452			n/a	n/a
WUDFHost.exe		3,500 K	5,408 K	3860			n/a	n/a
WmiPrvSE.exe	< 0.01	36,356 K	42,388 K	3976			n/a	n/a
WmiPrvSE.exe	0.56	18,988 K	37,888 K	7000			n/a	n/a
WmiPrvSE.exe		2,644 K	9,512 K	1724			n/a	n/a
WmiPrvSE.exe		3,284 K	10,004 K	2036			n/a	n/a
WmiPrvSE.exe		6,196 K	13,208 K	10024			n/a	n/a
winlogon.exe		2,520 K	10,292 K	18904			n/a	n/a
wininit.exe		1,772 K	6,860 K	880			n/a	n/a
TiWorker.exe		3,480 K	11,140 K	1100			n/a	n/a
System Idle Process	90.34	60 K	8 K	0			Enabled (permane...	n/a

3) Rebuilding the same executable After enabling DEP & ASLR



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

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