

SECURE CODING

CSE-2010

LAB ASSIGNMENT – 11

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Lab experiment – Creating secure and safe executable

Download and install visual studio (recent edition)

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

Download process explorer and verify the DEP & ASLR status

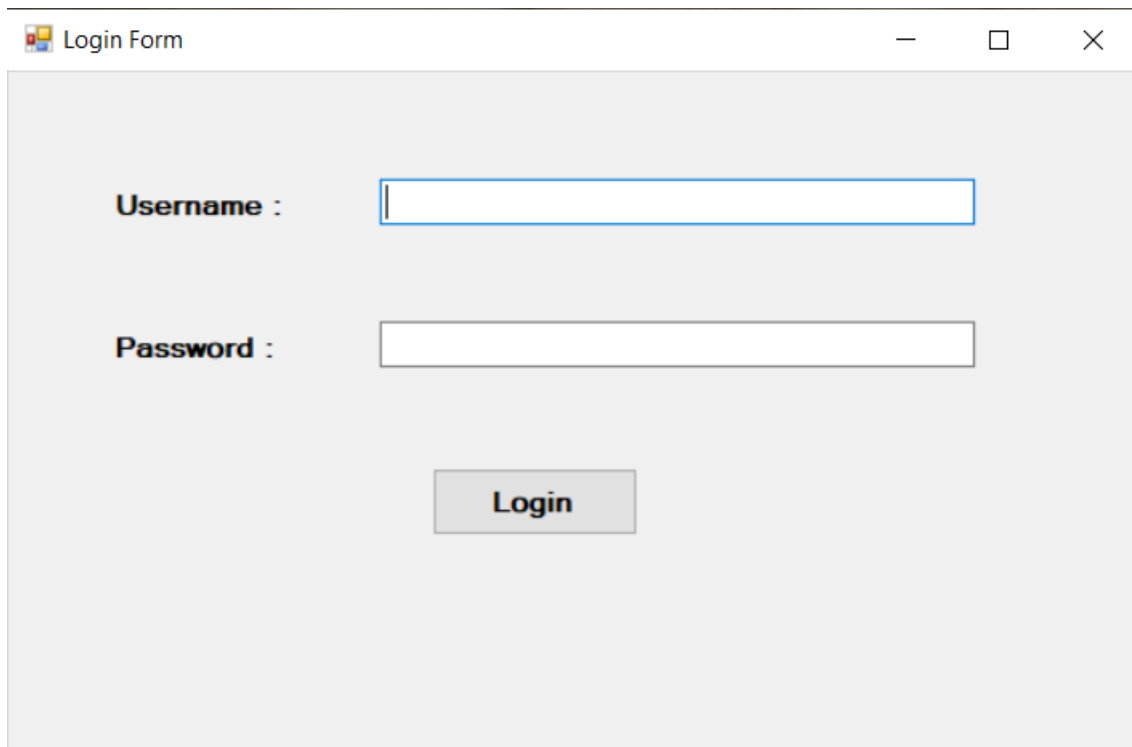
Enable software DEP, ASLR and SEH in the visual studio and rebuild the same executable

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

Report the same with separate screenshot - before and after enabling DEP & ASLR.

Happy Learning!!!

The Application LOGINFORM.exe



The DEP and ASLR status in program explorer when Data Execution Prevention (DEP) and Randomized Base Address (ASLR) has been disabled in Visual Studio for the application LOGINFORM.exe

Process Explorer - Sysinternals www.sysinternals.com [LAPTOP-BE96G0J3\Nishit Verma]

File Options View Process Find Users Help

Process	CPU	Private Bytes	Working Set	PID	Description	Company Name	DEP	ASLR
System	0.25	7,220 K	9,676 K	16316			Disabled (permanent)	
smss-control.exe	<0.01	78,960 K	132,152 K	7584	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		6,112 K	6,916 K	9848	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		3,02,280 K	2,55,372 K	20012	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		21,294 K	33,456 K	18124	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		13,704 K	15,748 K	14324	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		33,684 K	44,128 K	16888	Google Chrome	Google LLC	Enabled (permanent)	ASLR
cmd.exe		2,152 K	3,848 K	14872	Windows Command Process	Microsoft Corporation	Enabled (permanent)	ASLR
conhost.exe		6,880 K	7,548 K	18398	Console Window Host	Microsoft Corporation	Enabled (permanent)	ASLR
browserhost.exe		5,416 K	8,300 K	12340	McAfee WebAdvisor	McAfee, LLC	Enabled (permanent)	ASLR
cmd.exe		2,152 K	3,864 K	12292	Windows Command Process	Microsoft Corporation	Enabled (permanent)	ASLR
conhost.exe		6,672 K	7,536 K	10444	Console Window Host	Microsoft Corporation	Enabled (permanent)	ASLR
MsBrowserHost.exe		4,744 K	9,872 K	18112	McAfee W355 Shared Browser	McAfee, LLC	Enabled (permanent)	ASLR
chrome.exe		11,788 K	19,060 K	16332	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe	0.01	234,016 K	1,92,168 K	16352	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		17,960 K	18,964 K	11060	Google Chrome	Google LLC	Enabled (permanent)	ASLR
smss-control.exe	0.27	6,336 K	19,900 K	1400			Disabled (permanent)	ASLR
devext.exe	1.19	2,42,444 K	3,520 K	5688	Microsoft Visual Studio 2019	Microsoft Corporation	Enabled (permanent)	ASLR
svchost2.exe	<0.01	46,776 K	67,008 K	12776	PerfWattson2.exe	Microsoft Corporation	Enabled (permanent)	ASLR
Microsoft.ServiceHub.Control	<0.01	41,432 K	56,372 K	12132	Microsoft.ServiceHub.Control	Microsoft	Enabled (permanent)	ASLR
ServiceHub.IdentityHost.exe	0.01	60,792 K	79,528 K	4704	ServiceHub.IdentityHost.exe	Microsoft	Enabled (permanent)	ASLR
ServiceHub.VSDetours		94,908 K	77,992 K	4708	ServiceHub.VSDetours.exe	Microsoft	Enabled (permanent)	ASLR
ServiceHub.Subscriptions	0.01	1,00,960 K	1,02,232 K	9900	ServiceHub.Subscriptions	Microsoft	Enabled (permanent)	ASLR
ServiceHub.Host.CLR.x64		1,24,448 K	81,928 K	19144	ServiceHub.Host.CLR.x64	Microsoft	Enabled (permanent)	ASLR
ServiceHub.TestWinds		64,544 K	71,936 K	13320	ServiceHub.TestWinds	Microsoft	Enabled (permanent)	ASLR
ServiceHub.Host.CLR.x64		57,488 K	63,256 K	19320	ServiceHub.Host.CLR.x64	Microsoft	Enabled (permanent)	ASLR
ServiceHub.DataWd.exe	0.83	87,640 K	96,992 K	14064	ServiceHub.DataWd.exe	Microsoft	Enabled (permanent)	ASLR
ServiceHub.ThreadsWd	<0.01	72,176 K	80,084 K	2344	ServiceHub.ThreadsWd	Microsoft	Enabled (permanent)	ASLR
vcpgsrv.exe	<0.01	19,216 K	26,776 K	18728	Microsoft(R) Visual C++ Pack	Microsoft Corporation	Enabled (permanent)	ASLR
MSBuild.exe		30,368 K	46,716 K	14548	MSBuild.exe	Microsoft Corporation	Enabled (permanent)	ASLR
conhost.exe		6,396 K	10,820 K	2496	Console Window Host	Microsoft Corporation	Enabled (permanent)	ASLR
svchost2.exe		45,512 K	65,512 K	12776			Disabled (permanent)	ASLR
ScriptedSandBox4.exe	0.83	92,588 K	1,21,424 K	21372	ScriptedSandBox4.exe	Microsoft Corporation	Enabled (permanent)	ASLR
process.exe		5,196 K	11,404 K	15960	Sysinternals Process Explorer	Sysinternals - www.sysinternals.com	Enabled (permanent)	ASLR
process64.exe	0.81	41,460 K	60,400 K	18332	Sysinternals Process Explorer	Sysinternals - www.sysinternals.com	Enabled (permanent)	ASLR
SnippingTool.exe	0.30	4,516 K	28,024 K	12148	Snipping Tool	Microsoft Corporation	Enabled (permanent)	ASLR
GoogleCrashHandler64.exe		1,616 K	116 K	1126			n/a	n/a
cached.exe		1,672 K	148 K	1124			n/a	n/a
jcheck.exe		4,168 K	8,732 K	12536	Java Update Scheduler	Oracle Corporation	Enabled (permanent)	ASLR
java-check.exe		3,944 K	7,460 K	16872	Java Update Checker	Oracle Corporation	Enabled (permanent)	ASLR
HPSystemEventMgrNishitHost.exe		69,004 K	22,380 K	14420	HPSystemEventMgrNishitHost	HP Inc.	Enabled (permanent)	ASLR
McPcTray.exe		3,648 K	764 K	6456	McAfee File Lock Monitor	McAfee, LLC	Enabled (permanent)	ASLR
McSmrFw.exe		2,996 K	3,416 K	1212			n/a	n/a
Teams.exe	<0.01	2,02,736 K	1,46,476 K	10304	Microsoft Teams	Microsoft Corporation	Enabled (permanent)	ASLR
Teams.exe		1,09,620 K	77,392 K	5216	Microsoft Teams	Microsoft Corporation	Enabled (permanent)	ASLR

The DEP and ASLR status in program explorer when Data Execution Prevention (DEP) and Randomized Base Address (ASLR) has been **enabled** in Visual Studio for the application LOGINFORM.exe

Process Explorer - Sysinternals.com [LAPTOP-BE960UJ3\Nishit Verma]

Process	CPU	Private Bytes	Working Set	PID	Description	Company Name	DEP	ASLR
chrome.exe	< 0.01	78,328 K	1,31,812 K	7584	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		6,112 K	6,112 K	6,904 K	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		3,02,280 K	2,51,248 K	20,012	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		21,096 K	33,204 K	15,124	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		13,704 K	15,720 K	14,324	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		33,684 K	42,596 K	16,688	Google Chrome	Google LLC	Enabled (permanent)	ASLR
cmd.exe		2,152 K	3,816 K	14,872	Windows Command Process...	Microsoft Corporation	Enabled (permanent)	ASLR
conhost.exe		6,680 K	7,464 K	19,396	Console Window Host	Microsoft Corporation	Enabled (permanent)	ASLR
conhost.exe		2,152 K	3,820 K	12,292	Windows Command Process...	Microsoft Corporation	Enabled (permanent)	ASLR
conhost.exe		6,672 K	7,468 K	10,444	Console Window Host	Microsoft Corporation	Enabled (permanent)	ASLR
McAfeeBrowserHost.exe		4,744 K	9,848 K	18,112	McAfee WSS Shared Browse...	McAfee, LLC	Enabled (permanent)	ASLR
chrome.exe		13,820 K	19,048 K	16,332	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe	0.02	2,33,116 K	1,91,280 K	15,532	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		17,960 K	18,612 K	11,960	Google Chrome	Google LLC	Enabled (permanent)	ASLR
csrss-control.exe	0.25	6,336 K	19,440 K	1400			Disabled (permanent)	ASLR
devenv.exe	0.81	24,820 K	3,62,016 K	5680	Microsoft Visual Studio 2019	Microsoft Corporation	Enabled (permanent)	ASLR
PerfWatson2.exe	< 0.01	48,488 K	69,004 K	12,776	PerfWatson2.exe	Microsoft Corporation	Enabled (permanent)	ASLR
Microsoft.ServiceHub.Cont...		41,972 K	56,928 K	12,132	Microsoft ServiceHub Control...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.IdentityHost...	< 0.01	60,756 K	79,620 K	4,704	ServiceHub IdentityHost.exe	Microsoft	Enabled (permanent)	ASLR
ServiceHub.VSDetoured...		94,684 K	77,904 K	4,708	ServiceHub VSDetouredHost...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.SettingsHost...	0.13	1,00,812 K	1,02,132 K	9,900	ServiceHub SettingsHost.exe	Microsoft	Enabled (permanent)	ASLR
ServiceHub.Host.CLR.x86...		1,23,500 K	81,492 K	19,144	ServiceHub Host.CLR.x86...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.TestWindowSt...		64,320 K	71,824 K	13,220	ServiceHub TestWindowStor...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.Host.CLR.x86...	< 0.01	57,176 K	63,144 K	19,320	ServiceHub Host.CLR.x86...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.DataWareh...	0.66	91,008 K	1,02,588 K	14,048	ServiceHub DataWarehouse...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.ThreadedW...		71,400 K	80,484 K	2,344	ServiceHub ThreadedWaitDI...	Microsoft	Enabled (permanent)	ASLR
MSBuild.exe		33,612 K	50,312 K	14,548	MSBuild.exe	Microsoft Corporation	Enabled (permanent)	ASLR
conhost.exe		6,340 K	10,804 K	24,956	Console Window Host	Microsoft Corporation	Enabled (permanent)	ASLR
vcpgsrvr.exe	< 0.01	19,476 K	26,964 K	7,500	Microsoft (R) Visual C++ Pack...	Microsoft Corporation	Enabled (permanent)	ASLR
LOGINFORM.exe		15,316 K	26,988 K	16,560			Enabled (permanent)	ASLR
ScriptedSandBox64.exe	1.01	94,844 K	1,23,392 K	13,900	ScriptedSandBox64.exe	Microsoft Corporation	Enabled (permanent)	ASLR
proccexp.exe	5.120 K	5,120 K	11,372 K	15,960	Sysinternals Process Explorer	Sysinternals - www.sysinter...	Enabled (permanent)	ASLR
proccexp64.exe	1.02	41,364 K	60,612 K	18,332	Sysinternals Process Explorer	Sysinternals - www.sysinter...	Enabled (permanent)	ASLR
SnippingTool.exe	0.21	4,396 K	27,852 K	4,768	Snipping Tool	Microsoft Corporation	Enabled (permanent)	ASLR
GoogleCrashHandler.exe		1,616 K	116 K	11,236		n/a	n/a	n/a
GoogleCrashHandler64.exe		1,672 K	148 K	11,244		n/a	n/a	n/a
lsch.exe		4,168 K	8,680 K	12,936	Java Update Scheduler	Oracle Corporation	Enabled (permanent)	ASLR
jcheck.exe		3,944 K	7,408 K	16,672	Java Update Checker	Oracle Corporation	Enabled (permanent)	ASLR
HPSystemEventUtilityHost.exe		69,016 K	21,980 K	14,428	HPSystemEventUtilityHost	HP Inc.	Enabled (permanent)	ASLR
McPvTray.exe		3,648 K	784 K	64,656	McAfee File Lock Monitor	McAfee, LLC	Enabled (permanent)	ASLR
McConfrmak.exe		2,996 K	3,368 K	12,112			n/a	n/a
Teams.exe	< 0.01	2,02,740 K	146,156 K	10,304	Microsoft Teams	Microsoft Corporation	Enabled (permanent)	ASLR
Teams.exe		1,09,620 K	77,072 K	52,116	Microsoft Teams	Microsoft Corporation	Enabled (permanent)	ASLR
Teams.exe		15,760 K	60,856 K	17,024	Microsoft Teams	Microsoft Corporation	Enabled (permanent)	ASLR

CPU Usage: 9.56% Commit Charge: 58.75% Processes: 272 Physical Usage: 78.48%