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## **ASSIGNMENT – 11**

**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**

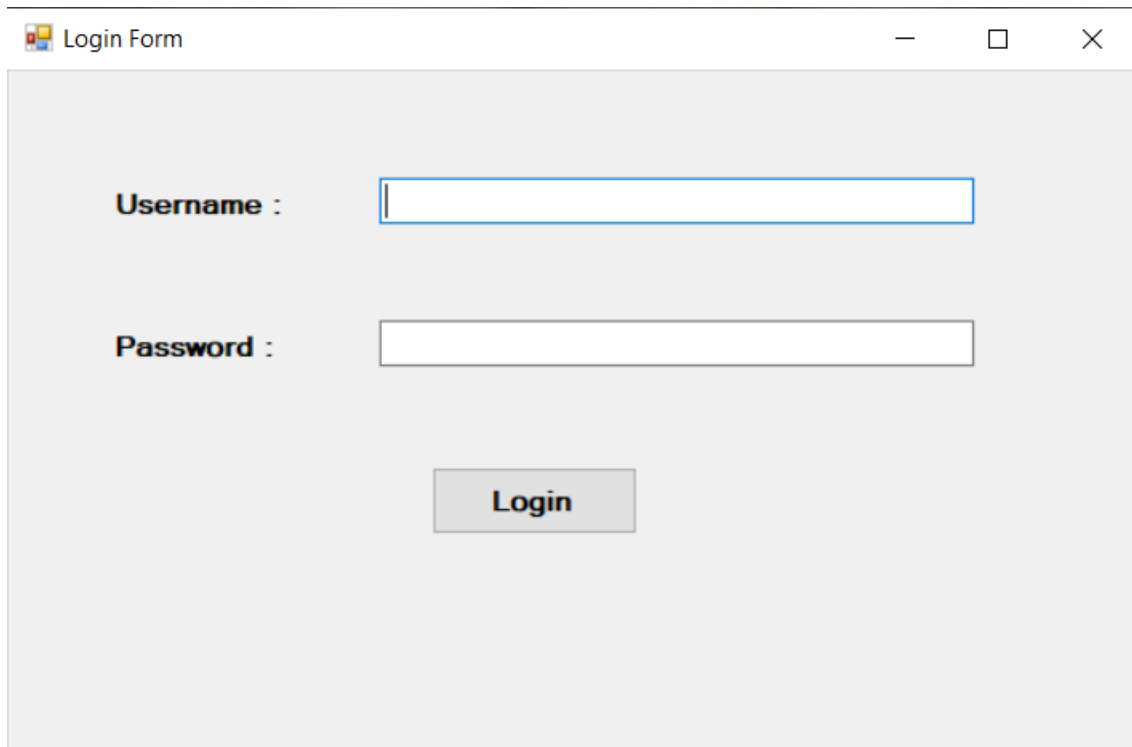
**Enable software DEP, ASLR and SEH in the visual studio and rebuild the same executable**

**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	CPU	Private Bytes	Working Set	PID	Description	Company Name	DEP	ASLR
conhost.exe	0.25	7,220 K	9,876 K	16116			Disabled (permanent)	
chrome.exe	< 0.01	78,980 K	1,32,152 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		21,284 K	33,456 K	15124	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		33,604 K	44,128 K	16088	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		6,600 K	7,548 K	12396	Console Window Host	Microsoft Corporation	Enabled (permanent)	ASLR
chrome.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
chrome.exe		4,744 K	9,572 K	18112	McAfee WSS Shared Browes...	McAfee, LLC	Enabled (permanent)	ASLR
chrome.exe		13,780 K	19,060 K	16332	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe	0.01	2,34,016 K	1,92,168 K	15532	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		17,960 K	18,964 K	11060	Google Chrome	Google LLC	Enabled (permanent)	ASLR
conhost.exe	0.27	6,336 K	19,900 K	1400		Microsoft Corporation	Disabled (permanent)	ASLR
devexp.exe	1.19	2,42,444 K	3,55,024 K	9680	Microsoft Visual Studio 2019	Microsoft Corporation	Enabled (permanent)	ASLR
PerfWatson2.exe	< 0.01	46,776 K	67,008 K	12776	PerfWatson2.exe	Microsoft Corporation	Enabled (permanent)	ASLR
Microsoft.ServiceHub.Cont...	< 0.01	41,432 K	56,372 K	12132	Microsoft.ServiceHub.Contro...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.IdentityHost...	0.01	60,792 K	79,528 K	4704	ServiceHub.IdentityHost.exe	Microsoft	Enabled (permanent)	ASLR
ServiceHub.VSDebu...		94,908 K	77,992 K	4708	ServiceHub.VSDebu...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.SelfRegist...	0.01	1,00,960 K	1,02,232 K	9900	ServiceHub.SelfRegist...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.Host.CLR.x8...		1,24,448 K	81,528 K	19144	ServiceHub.Host.CLR.x86	Microsoft	Enabled (permanent)	ASLR
ServiceHub.TestWindo...		64,544 K	71,936 K	13220	ServiceHub.TestWindowStor...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.Host.CLR.x8...		57,468 K	63,256 K	19320	ServiceHub.Host.CLR.x86	Microsoft	Enabled (permanent)	ASLR
ServiceHub.DataWareh...	0.83	87,640 K	96,992 K	14040	ServiceHub.DataWarehou...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.ThreadedW...	< 0.01	72,176 K	80,884 K	2344	ServiceHub.ThreadedW...	Microsoft	Enabled (permanent)	ASLR
vcpkgsvc.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	10,828 K	2496	Console Window Host	Microsoft Corporation	Enabled (permanent)	ASLR
conhost.exe		15,212 K	2,520 K	1400		Microsoft Corporation	Disabled (permanent)	ASLR
ScriptedSandbox64.exe	0.83	92,558 K	1,21,424 K	21372	ScriptedSandbox64.exe	Microsoft Corporation	Enabled (permanent)	ASLR
processp64.exe		5,196 K	11,404 K	15968	Systemtals Process Explorer	Systemtals - www.systemt...	Enabled (permanent)	ASLR
processp64.exe	0.81	41,460 K	60,480 K	18332	Systemtals Process Explorer	Systemtals - www.systemt...	Enabled (permanent)	ASLR
Shipping Tool.exe	0.30	4,516 K	28,024 K	12148	Shipping Tool	Microsoft Corporation	Enabled (permanent)	ASLR
GoogleCrashHandler64.exe		1,616 K	116 K	11236			n/a	n/a
GoogleCrashHandler64.exe		1,672 K	148 K	11244			n/a	n/a
lschex.exe		4,168 K	8,732 K	12536	Java Update Scheduler	Oracle Corporation	Enabled (permanent)	ASLR
lschex.exe		3,944 K	7,460 K	16672	Java Update Checker	Oracle Corporation	Enabled (permanent)	ASLR
HPSystemEventUtilityHost.exe		60,004 K	22,380 K	14432	HPSystemEventUtilityHost	HP Inc.	Enabled (permanent)	ASLR
McPvTray.exe		3,648 K	784 K	6456	McAfee File Lock Monitor	McAfee, LLC	Enabled (permanent)	ASLR
McSmfWk.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		1,08,620 K	77,196 K	5216	Microsoft Teams	Microsoft Corporation	Enabled (permanent)	ASLR

CPU Usage: 8.06% Commit Charge: 58.49% Processes: 272 Physical Usage: 78.18%

# 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: www.sysinternals.com [LAPTOP-BE960UJ3\Nishit Verma]

File Options View Process Find Users Help

Process	CPU	Private Bytes	Working Set	PID	Description	Company Name	DEP	ASLR
chrome.exe	< 0.01	78,332 K	1,31,812 K	7584	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		6,112 K	6,904 K	9848	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		3,02,280 K	2,51,248 K	20012	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		21,096 K	33,204 K	15124	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		13,784 K	15,720 K	14324	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		33,684 K	42,556 K	16088	Google Chrome	Google LLC	Enabled (permanent)	ASLR
cmd.exe		2,152 K	3,816 K	14872	Windows Command Process...	Microsoft Corporation	Enabled (permanent)	ASLR
conhost.exe		6,680 K	7,464 K	19396	Console Window Host	Microsoft Corporation	Enabled (permanent)	ASLR
browserhost.exe		5,416 K	8,180 K	12340	McAfee WebAdvisor	McAfee, LLC	Enabled (permanent)	ASLR
cmd.exe		2,152 K	3,828 K	12292	Windows Command Process...	Microsoft Corporation	Enabled (permanent)	ASLR
conhost.exe		6,672 K	7,468 K	10444	Console Window Host	Microsoft Corporation	Enabled (permanent)	ASLR
lfeBrowserHost.exe		4,744 K	9,848 K	18112	McAfee WSS Shared Browse...	McAfee, LLC	Enabled (permanent)	ASLR
chrome.exe		13,820 K	19,048 K	16332	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe	0.02	2,33,116 K	1,91,280 K	15532	Google Chrome	Google LLC	Enabled (permanent)	ASLR
chrome.exe		17,960 K	18,612 K	11060	Google Chrome	Google LLC	Enabled (permanent)	ASLR
kamp-control.exe	0.25	6,336 K	19,440 K	1400			Disabled (permanent)	
devenv.exe	0.81	2,48,208 K	3,62,016 K	5680	Microsoft Visual Studio 2019	Microsoft Corporation	Enabled (permanent)	ASLR
PuWtWatson2.exe	< 0.01	48,488 K	60,004 K	12776	PuWtWatson2.exe	Microsoft Corporation	Enabled (permanent)	ASLR
Microsoft.ServiceHub.Cont...		41,572 K	56,508 K	12132	Microsoft.ServiceHub.Contro...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.IdentityHost...	< 0.01	60,796 K	79,620 K	4704	ServiceHub.IdentityHost.exe	Microsoft	Enabled (permanent)	ASLR
ServiceHub.VSDetoure...		94,684 K	77,904 K	4708	ServiceHub.VSDetouredHos...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.SettingsHos...	0.13	1,00,812 K	1,02,132 K	9900	ServiceHub.SettingsHost.exe	Microsoft	Enabled (permanent)	ASLR
ServiceHub.Host.CLR.x86...		1,23,500 K	81,480 K	19144	ServiceHub.Host.CLR.x86	Microsoft	Enabled (permanent)	ASLR
ServiceHub.TestWindo...		64,320 K	71,832 K	13220	ServiceHub.TestWindowStor...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.Host.CLR.x86...	< 0.01	57,176 K	63,144 K	19320	ServiceHub.Host.CLR.x86	Microsoft	Enabled (permanent)	ASLR
ServiceHub.DataWareh...	0.66	91,008 K	1,02,588 K	14048	ServiceHub.DataWarehouse...	Microsoft	Enabled (permanent)	ASLR
ServiceHub.ThreadedW...		71,400 K	80,484 K	2344	ServiceHub.ThreadedWaitD...	Microsoft	Enabled (permanent)	ASLR
MSBuild.exe		33,612 K	92,312 K	14548	MSBuild.exe	Microsoft Corporation	Enabled (permanent)	ASLR
conhost.exe		6,340 K	10,804 K	2496	Console Window Host	Microsoft Corporation	Enabled (permanent)	ASLR
vcpgngen.exe	< 0.01	19,476 K	26,864 K	7500	Microsoft (R) Visual C++ Pack...	Microsoft Corporation	Enabled (permanent)	ASLR
LOGINFORM.exe		15,316 K	25,948 K	16580			Enabled (permanent)	ASLR
ScriptedSandbox64.exe	1.01	94,944 K	1,23,360 K	13000	ScriptedSandbox64.exe	Microsoft Corporation	Enabled (permanent)	ASLR
procep.exe		5,120 K	11,372 K	15965	Sysinternals Process Explorer	Sysinternals - www.sysinter...	Enabled (permanent)	ASLR
procep64.exe	1.02	41,364 K	60,612 K	18332	Sysinternals Process Explorer	Sysinternals - www.sysinter...	Enabled (permanent)	ASLR
ShippingTool.exe	0.21	4,396 K	27,852 K	4768	Shipping Tool	Microsoft Corporation	Enabled (permanent)	ASLR
GoogleCrashHandler.exe		1,616 K	116 K	11236		n/a	n/a	n/a
GoogleCrashHandler64.exe		1,672 K	140 K	11244		n/a	n/a	n/a
jucheid.exe		4,168 K	8,660 K	12536	Java Update Scheduler	Oracle Corporation	Enabled (permanent)	ASLR
jucheid.exe		3,944 K	7,408 K	16672	Java Update Checker	Oracle Corporation	Enabled (permanent)	ASLR
HPSystemEventUtilityHost.exe		69,016 K	21,980 K	14428	HPSystemEventUtilityHost	HP Inc.	Enabled (permanent)	ASLR
McAfeeTray.exe		3,640 K	784 K	6456	McAfee File Lock Monitor	McAfee, LLC	Enabled (permanent)	ASLR
McSmfak.exe		2,996 K	3,308 K	1212		n/a	n/a	n/a
Teams.exe	< 0.01	2,82,740 K	1,46,156 K	10304	Microsoft Teams	Microsoft Corporation	Enabled (permanent)	ASLR
Teams.exe		1,09,620 K	77,072 K	5216	Microsoft Teams	Microsoft Corporation	Enabled (permanent)	ASLR
Teams.exe		15,760 K	60,056 K	17204	Microsoft Teams	Microsoft Corporation	Enabled (permanent)	ASLR

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