

Part 1:

The screenshot shows the Visual Studio IDE with the assembly file `stackDemonstration.asm` open. The code defines a `main` procedure that moves `aVal` to `eax`, `bVal` to `ebx`, calls `DumpRegs`, then `exchangeEaxAndEbx`, and finally `ExitProcess, 0`. The `Debug Console` window displays the initial register values: `EAX=00121212`, `EBX=00343434`, `ECX=004010AA`, `EDX=004010AA`, `ESI=004010AA`, `EDI=004010AA`, `EBP=0019FF80`, `ESP=0019FF74`, `EIP=00403670`, `EFL=00000246`, `CF=0`, `SF=0`, `ZF=1`, `OF=0`, `AF=0`, `PF=1`. A second dump shows the registers after the `exchangeEaxAndEbx` instruction, where `EAX` and `EBX` have swapped values. The `Output` window shows the program's execution path, including the loading of various DLLs and the final exit with code 0.

```
7 .data
8 aVal dword 121212h
9 bVal dword 343434h
10
11 .code
12 main PROC
13     mov eax, aVal
14     mov ebx, bVal
15     call DumpRegs
16
17     call exchangeEaxAndEbx
18     call DumpRegs
19
20
21     INVOKE ExitProcess, 0
22 main ENDP
23
```

Microsoft Visual Studio Debug Console

```
EAX=00121212 EBX=00343434 ECX=004010AA EDX=004010AA
ESI=004010AA EDI=004010AA EBP=0019FF80 ESP=0019FF74
EIP=00403670 EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1

EAX=00343434 EBX=00121212 ECX=004010AA EDX=004010AA
ESI=004010AA EDI=004010AA EBP=0019FF80 ESP=0019FF74
EIP=0040367A EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1
```

C:\Users\knakata595\OneDrive - Contra Costa Community College District Employees\COMSC260\Project32_VS2022\Debug\Project.exe (process 9276) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .

Part 2:

The screenshot shows the Visual Studio IDE with the assembly file `return4Bytes...rAddress.asm` open. The code increments `eax` by 1 four times, then decrements it, and finally calls `ExitProcess, 0`. The `Watch` window shows the value of `eax` as `4605509`. The `Registers` window shows the current state of the registers: `EAX = 00464645`, `EBX = 00343434`, `ECX = 0040100A`, `EDX = 0040100A`, `ESI = 00401034`, `EDI = 0040100A`, `EIP = 00401035`, `ESP = 0019FF74`, `EBP = 0019FF80`, `EFL = 00000202`.

```
22     mov eax, aVal
23     mov ebx, bVal
24
25     call addNumAndLeap
26
27     inc eax          ; 1 byte - skipped
28     inc eax          ; 1 byte - skipped
29     inc eax          ; 1 byte - skipped
30     inc eax          ; 1 byte - skipped
31
32     dec eax          ; CPU returns here after addNumAndLeap
33                     ; EAX should be 464645h
34
35     INVOKE ExitProcess, 0
36 main ENDP
```

Watch 1

Name	Value	Type
eax	4605509	unsigned int
currX	identifier "currX" is undefined	
currY	identifier "currY" is undefined	
myArray	identifier "myArray" is undefined	
myString	identifier "myString" is undefined	
ebx	343434	unsigned int

Registers

```
EAX = 00464645 EBX = 00343434 ECX = 0040100A EDX = 0040100A
ESI = 00401034 EDI = 0040100A EIP = 00401035 ESP = 0019FF74
EBP = 0019FF80 EFL = 00000202
```