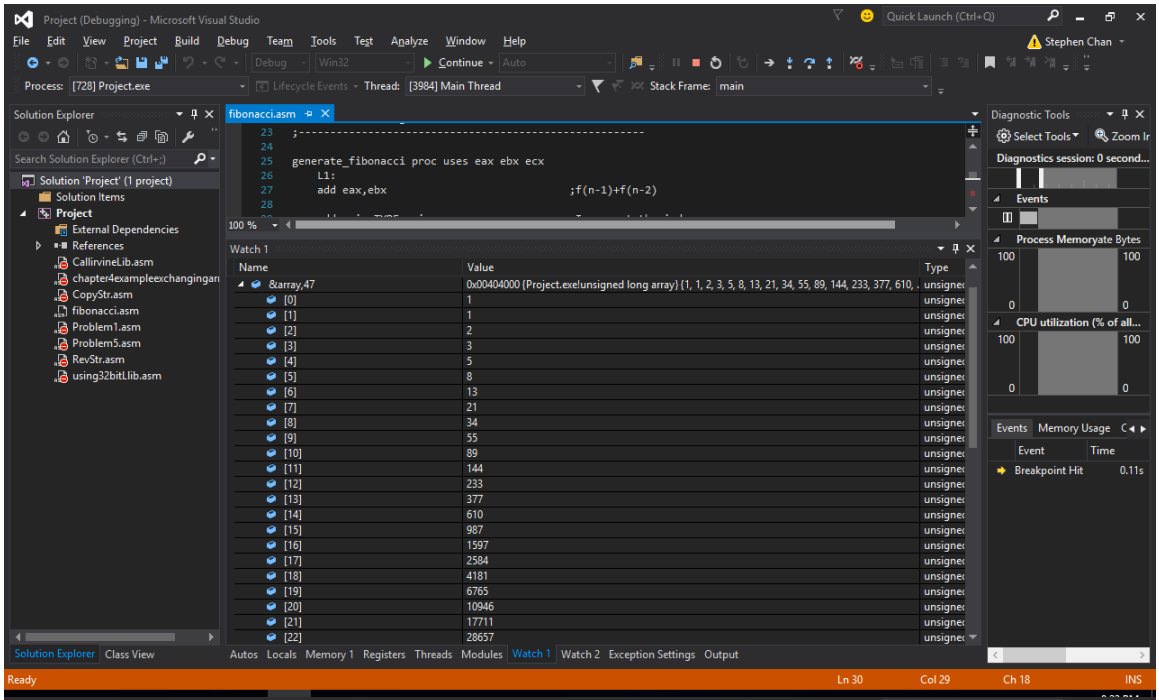
Stephen Chan
Team Number: 422
9419
CPSC 240 Assignment 1

Program Calls a procedure to generate the first 47 values of the Fibonacci sequence. The values are inputted into the array by a loop,

```
; Assignment 1 Fibonacci
; Stephen Chan
; 9419
; CPSC 240 Assignment 1
; Partner: Daniel Berumen
; Creates a fibonacci array of values.

.386
.model flat,stdcall
.stack 4096
ExitProcess proto,dwExitCode:dword

.data
 array DWORD 1,47 dup(0) ; set array values to be 0
 loop_count DWORD 47 ; initialize loop counter to be 47

.code
;-----------------------------------------------------
; generate_fibonacci proc USES eax ebx ecx
; Generates fibonacci values and stores in an array.
; Receives: ESI points to the array, ECX = count
; Returns: nothing
;-----------------------------------------------------

generate_fibonacci proc uses eax ebx ecx
L1:
add eax,ebx ;f(n-1)+f(n-2)
add esi, TYPE esi ;Increment the index
mov [esi],eax ;Move the eax value into array

xchg ebx,eax ;Have eax be the F(n-2) value
loop L1
ret
generate_fibonacci endp

main proc
mov esi, OFFSET array ; gets the memory address of the array into esi
mov ecx, loop_count ; Sets loop counter to the array size
mov eax,0 ; Set the initial value of eax to 0
mov ebx,1 ; Set the initial value of ebx to 1

call generate_fibonacci ; Calls the procedure

invoke ExitProcess,0
main endp
end main
```


Project (Debugging) - Microsoft Visual Studio
Quick Launch (Ctrl+Q)
File Edit View Project Build Debug Team Tools Test Analyze Window Help
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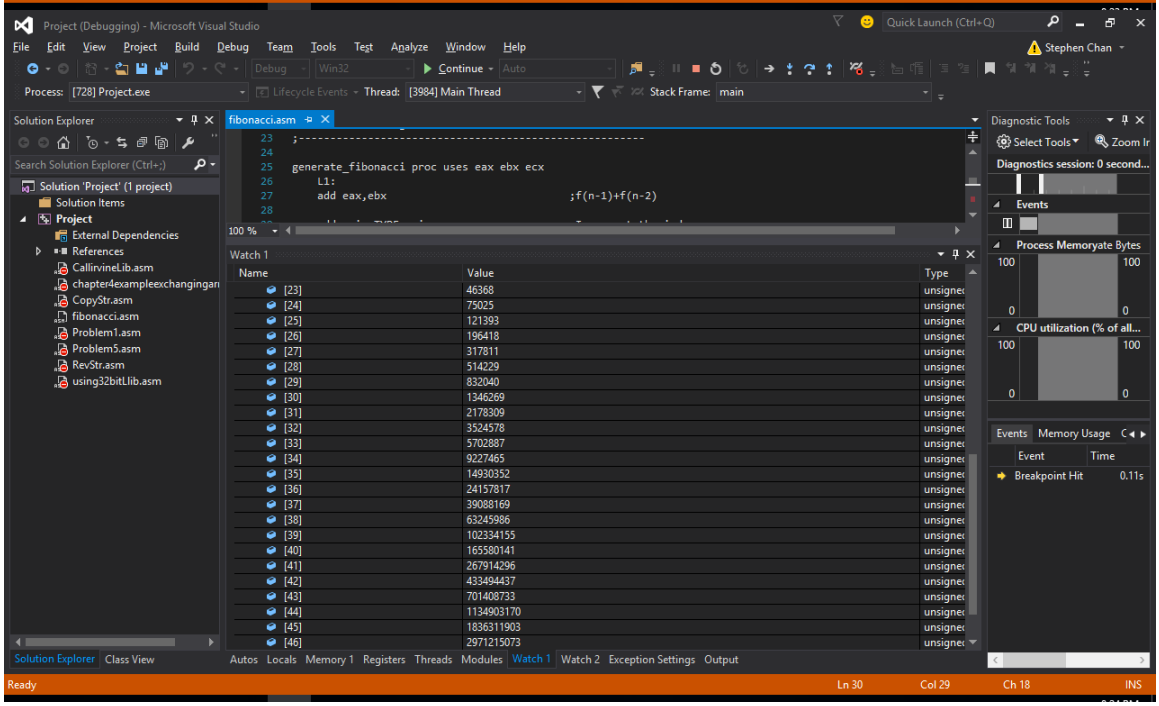
Debug Win32 Continue Auto
Process: [728] Project.exe Lifecycle Events Thread: [3984] Main Thread Stack Frame: main
Solution Explorer
Search Solution Explorer (Ctrl+;)
Solution 'Project' (1 project)
Solution Items
Project
External Dependencies
References
CallirvineLib.asm
chapter4exampleexchangingar
CopyStr.asm
fibonacci.asm
Problem1.asm
Problem5.asm
RevStr.asm
using32bitLlib.asm
Solution Explorer Class View
fibonacci.asm
23 ;---
24
25 generate_fibonacci proc uses eax ebx ecx
26 L1:
27 add eax,ebx ;f(n-1)+f(n-2)
28
100 %
Watch 1
Name Value Type
&array,47 0x00404000 {Project.exelunsigned long array} {1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, ... unsigned
[0] 1 unsigned
[1] 1 unsigned
[2] 2 unsigned
[3] 3 unsigned
[4] 5 unsigned
[5] 8 unsigned
[6] 13 unsigned
[7] 21 unsigned
[8] 34 unsigned
[9] 55 unsigned
[10] 89 unsigned
[11] 144 unsigned
[12] 233 unsigned
[13] 377 unsigned
[14] 610 unsigned
[15] 987 unsigned
[16] 1597 unsigned
[17] 2584 unsigned
[18] 4181 unsigned
[19] 6765 unsigned
[20] 10946 unsigned
[21] 17711 unsigned
[22] 28657 unsigned
Autos Locals Memory 1 Registers Threads Modules Watch 1 Watch 2 Exception Settings Output
Diagnostic Tools
Select Tools Zoom In
Diagnostics session: 0 second...
Events
Process Memoryate Bytes
100 0 100 0
CPU utilization (% of all...
100 0 100 0
Events Memory Usage
Event Time
Breakpoint Hit 0.11s
Ready Ln 30 Col 29 Ch 18 INS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23 ;---
24
25 generate_fibonacci proc uses eax ebx ecx
26 L1:
27 add eax,ebx ;f(n-1)+f(n-2)
28
100 %
Watch 1
Name Value Type
[23] 46368 unsigned
[24] 75025 unsigned
[25] 121393 unsigned
[26] 196418 unsigned
[27] 317811 unsigned
[28] 514229 unsigned
[29] 832040 unsigned
[30] 1346269 unsigned
[31] 2178309 unsigned
[32] 3524578 unsigned
[33] 5702887 unsigned
[34] 9227465 unsigned
[35] 14930352 unsigned
[36] 24157817 unsigned
[37] 39088169 unsigned
[38] 63245986 unsigned
[39] 102334155 unsigned
[40] 165580141 unsigned
[41] 267914296 unsigned
[42] 433494437 unsigned
[43] 701408733 unsigned
[44] 1134903170 unsigned
[45] 1836311903 unsigned
[46] 2971215073 unsigned
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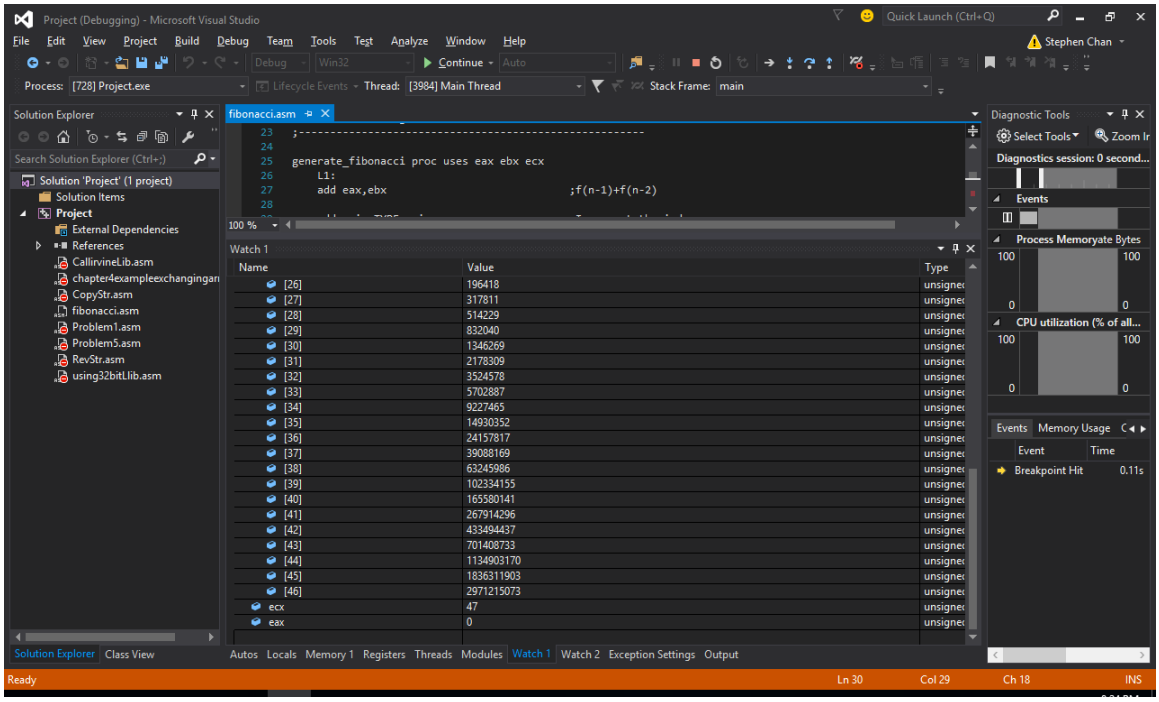

Conclusion: I learned how procedures are implemented along with using indirect operands to access and change array contents. I also learned how loops are used within procedures.