

COAL LAB

Name: Kashif Ali

Roll No: 20K-1890

Task No 4

Submitted to: Muhammad Kariz kamal

```
1  INCLUDE irvine32.inc
2
3  .data
4
5  val1 SDWORD 8000
6
7
8  .code
9
10 main PROC
11
12 mov eax, [val1]
13 add eax, 1
14
15 call DumpRegs
16 exit
17 main ENDP
18 END main
19
```

Q1 Code

....

Textasm

```
1  INCLUDE irvine32.inc
2
3  .data
4
5  val1 SDWORD 8000
6
7
8  .code
9
10 main PROC
11
12 mov eax, [val1]
13 add eax, 1
14
15 call DumpRegs
16 exit
17 main ENDP
18 END main
19
```

Microsoft Visual Studio Debug Console

EAX=00001F41 EBX=00E1D000 ECX=002710AA EDX=002710AA
ESI=002710AA EDI=002710AA EBP=00DBF98C ESP=00DBF980
EIP=0027366D EFL=00000206 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=1

C:\Users\kashiii\source\repos\kashiiitech\Debug\kashiiitech.exe (process 1064) exited with code 0.
Press any key to close this window . . .

Here values of Carry Flag and Sign Flag is 0

Q1 output

```
Text.asm
1  INCLUDE Irvine32.inc
2
3  .data
4
5  val1 SDWORD 8000
6
7
8  .code
9
10 main PROC
11
12 mov ax, 7FF0h
13
14 add al, 10h
```

Q2 part1

Microsoft Visual Studio Debug Console

```
EAX=00FA7F00  EBX=01167000  ECX=00E610AA  EDX=00E610AA
ESI=00E610AA  EDI=00E610AA  EBP=00FAF80C  ESP=00FAF800
EIP=00E6366B  EFL=00000247  CF=1  SF=0  ZF=1  OF=0  AF=0  PF=1
```

C:\Users\kashiii\source\repos\kashiiitech\Debug\kashiiitech.exe (process 7952) exited with code 0.
Press any key to close this window . . .

194 %

Output

Ln: 14 Ch: 7 TABS CRLF

Text.asm

```
1  INCLUDE irvine32.inc
2
3  .data
4
5  val1 SDWORD 8000
6
7
8  .code
9
10 main PROC
11
12 mov ax, 7FF0h
13
14 ;add al, 10h
15 add ah, 1
```

Q2 part2 with output

Microsoft Visual Studio Debug Console

EAX=012F80F0	EBX=01041000	ECX=00CE10AA	EDX=00CE10AA
ESI=00CE10AA	EDI=00CE10AA	EBP=012FFC24	ESP=012FFC18
EIP=00CE366C	EFL=00000A92	CF=0	SF=1 ZF=0 OF=1 AF=1 PF=0

C:\Users\kashiii\source\repos\kashiiitech\Debug\kashiiitech.exe (process 1888) exited with code 0.
Press any key to close this window . . .

```
Text.asm
1  INCLUDE irvine32.inc
2
3  .data
4
5  val1 SDWORD 8000
6
7
8  .code
9
10 main PROC
11
12 mov ax, 7FF0h
13
14 ;add al, 10h
15 ;add ah, 1
16 add ax, 2
17
```

Q2 part 3 with output

```
Microsoft Visual Studio Debug Console

EAX=010F7FF2  EBX=00E8E000  ECX=003E10AA  EDX=003E10AA
ESI=003E10AA  EDI=003E10AA  EBP=010FFEF8  ESP=010FFEF8
EIP=003E366D  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0

:\Users\kashiii\source\repos\kashiiitech\Debug\kashiiitech.exe (process 8680) exited with code 0.
Press any key to close this window . . .
```

TASK 3 Code

```
1  INCLUDE Irvine32.inc
2
3  .data
4
5  arr DWORD 8,5,1,2,6
6
7  .code
8
9  main PROC
10
11  mov eax,arr
12  xchg eax,[arr+8]
13  xchg eax,arr
14  mov eax,[arr+4]
15  xchg eax,[arr+12]
16  xchg eax,[arr+4]
17  mov eax,[arr+12]
18  xchg eax,[arr+8]
19  xchg eax,[arr+12]
20  mov eax,[arr+16]
21  xchg eax,[arr+12]
22  xchg eax,[arr+16]
23
24  call DumpRegs
25  exit
26  main ENDP
27  END main
28
```

Solution Explorer

Search Solution Explorer (Ctrl+J)

Solution 'kashiitech' (1 of 1 project)

kashiitech

- References
- External Dependencies
- Header Files
- Resource Files
- Source Files
 - Text.asm

Solution Explorer Git Changes

Properties

Build

160% No issues found

Ln: 12 Ch: 17 TABS CRLF

Output

Show output from: Build

```
Build started...
1>----- Build started: Project: kashiitech, Configuration: Debug Win32 -----
1>Assembling Text.asm...
1>kashiitech.vcxproj -> C:\Users\kashiii\source\repos\kashiitech\Debug\kashiitech.exe
***** Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped *****
```

```
Text.asm 1 INCLUDE Irvine32.inc
2
3 .data
4 arr DWORD 8,5,1,2,
5
6 .code
7
8
9 main PROC
10
11 mov eax,arr
12 xchg eax,[arr+8]
13 xchg eax,arr
14 mov eax,[arr+4]
15 xchg eax,[arr+12]
16 xchg eax,[arr+4]
17 mov eax,[arr+12]
18 xchg eax,[arr+8]
19 xchg eax,[arr+12]
20 mov eax,[arr+16]
21 xchg eax,[arr+12]
22 xchg eax,[arr+16]
23
24 call DumpRegs
25 exit
26 main ENDP
27 END main
28
```

Microsoft Visual Studio Debug Console

EAX=00000006	EBX=00EE7000	ECX=004E10AA	EDX=004E10AA
ESI=004E10AA	EDI=004E10AA	EBP=0113FCB4	ESP=0113FCA8
EIP=004E36A9	EFL=00000246	CF=0	SF=0 ZF=1 OF=0 AF=0 PF=1

C:\Users\kashiii\source\repos\kashiiitech\Debug\kashiiitech.exe (process 1532) exited with code 0.
Press any key to close this window . . .

Task 3
Output

...


```
1 INCLUDE irvine32.inc
2 .data
3 arrayB BYTE 10, 20, 30
4 arrayW WORD 150, 250, 350
5 arrayD DWORD 600, 1200, 1800
```

```
6
7 SUM1 DWORD ?
8 SUM2 DWORD ?
9 SUM3 DWORD ?
```

```
10 .code
11 main PROC
```

```
12
13 mov eax, 0
14 movzx eax, arrayB[0]
15 add eax, dword ptr arrayW[0]
16 add eax, arrayD[0]
17 mov SUM1, eax
```

```
18
19 call DumpRegs
```

```
20 mov eax, 0
21 movzx eax, arrayB[1]
22 add eax, dword ptr arrayW[1]
23 add eax, arrayD[1]
24 mov SUM2, eax
25 call DumpRegs
```

```
26
27 mov eax, 0
28 movzx eax, arrayB[2]
29 add eax, dword ptr arrayW[2]
30 add eax, arrayD[2]
31 mov SUM3, eax
```

Q4 Code

...

Text.asm

```
1  INCLUDE irvine32.inc
2  .data
3  arrayB BYTE 10, 20, 30
4  arrayW WORD 150, 250, 350
5  arrayD DWORD 600, 1200, 1800
6
7  SUM1 DWORD ?
8  SUM2 DWORD ?
9  SUM3 DWORD ?
10 .code
11 main PROC
12
13     mov eax, 0
14     movzx eax, arrayB[0]
15     add eax, dword ptr arrayW[0]
16     add eax, arrayD[0]
17     mov SUM1, eax
18
19     call DumpRegs
20     mov eax, 0
21     movzx eax, arrayB[1]
22     add eax, dword ptr arrayW[1]
23     add eax, arrayD[1]
24     mov SUM2, eax
25     call DumpRegs
```

Microsoft Visual Studio Debug Console

EAX=00FA02F8	EBX=00F44000	ECX=000210AA	EDX=000210AA
ESI=000210AA	EDI=000210AA	EBP=00DBFF28	ESP=00DBFF1C
EIP=00023682	EFL=00000202	CF=0	SF=0 ZF=0 OF=0 AF=0 PF=0

EAX=0E00FA16	EBX=00F44000	ECX=000210AA	EDX=000210AA
ESI=000210AA	EDI=000210AA	EBP=00DBFF28	ESP=00DBFF1C
EIP=000236A4	EFL=00000203	CF=1	SF=0 ZF=0 OF=0 AF=0 PF=0

EAX=060E0118	EBX=00F44000	ECX=000210AA	EDX=000210AA
ESI=000210AA	EDI=000210AA	EBP=00DBFF28	ESP=00DBFF1C
EIP=000236C6	EFL=00000206	CF=0	SF=0 ZF=0 OF=0 AF=0 PF=1

C:\Users\kashiii\source\repos\kashiiitech\Debug\kashiiitech.exe (process 1580) exited with code 0.
Press any key to close this window . . .

194 %

No issues found

Output

Show output from: Build

```
Build started...
1>----- Build started: Project: kashiiitech, Configuration: Debug Win32 -----
1>Assembling Text.asm...
1>kashiiitech.vcxproj -> C:\Users\kashiii\source\repos\kashiiitech\Debug\kashiiitech.exe
***** Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped *****
```

Q4 output

...

```

1  INCLUDE irvine32.inc
2  .data
3      array1 BYTE 10, 20, 30, 40
4      array2 BYTE 4 DUP(?)
5  .code
6  main PROC
7      mov eax,0
8      mov ebx,0
9      mov edx,0
10     mov ebx,lengthof array2
11     dec ebx
12     mov al,array1[ebx]
13     mov array2[eax],al
14     movzx edx,array2[eax] ; array2[3]=00000028 (EDX)
15     call DumpRegs
16     dec ebx
17     inc eax
18     mov al,array1[ebx]
19     mov array2[eax],al
20     movzx edx,array2[eax] ; array2[2]=0000001E (EDX)
21     call DumpRegs
22     dec ebx
23     inc eax
24     mov al,array1[ebx]
25     mov array2[eax],al
26     movzx edx,array2[eax] ; array2[1]=00000014 (EDX)
27     call DumpRegs
28     dec ebx
29     inc eax
30     mov al,array1[ebx]
31     mov array2[eax],al
32     movzx edx,array2[eax] ; array2[0]=0000000A (EDX)
33     call DumpRegs
34
35     exit
36     main ENDP
37     END main
38

```

Q5 Code

...

Q5 Output

```
main PROC
mov  eax,0
mov  ebx,0
mov  edx,0
mov  ebx,lengthof array1
dec  ebx
mov  al,array1[ebx]
mov  array2[eax],al
movzx edx,array2[eax]
call DumpRegs
dec  ebx
inc  eax
mov  al,array1[ebx]
mov  array2[eax],al
movzx edx,array2[eax]
call DumpRegs
dec  ebx
inc  eax
mov  al,array1[ebx]
mov  array2[eax],al
movzx edx,array2[eax]
call DumpRegs
dec  ebx
```

Microsoft Visual Studio Debug Console

```
EAX=00000028  EBX=00000003  ECX=003A10AA  EDX=00000028
ESI=003A10AA  EDI=003A10AA  EBP=007BF86C  ESP=007BF860
EIP=003A368D  EFL=00000206  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=1
```

```
EAX=0000001E  EBX=00000002  ECX=003A10AA  EDX=0000001E
ESI=003A10AA  EDI=003A10AA  EBP=007BF86C  ESP=007BF860
EIP=003A36A7  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0
```

```
EAX=00000014  EBX=00000001  ECX=003A10AA  EDX=00000014
ESI=003A10AA  EDI=003A10AA  EBP=007BF86C  ESP=007BF860
EIP=003A36C1  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0
```

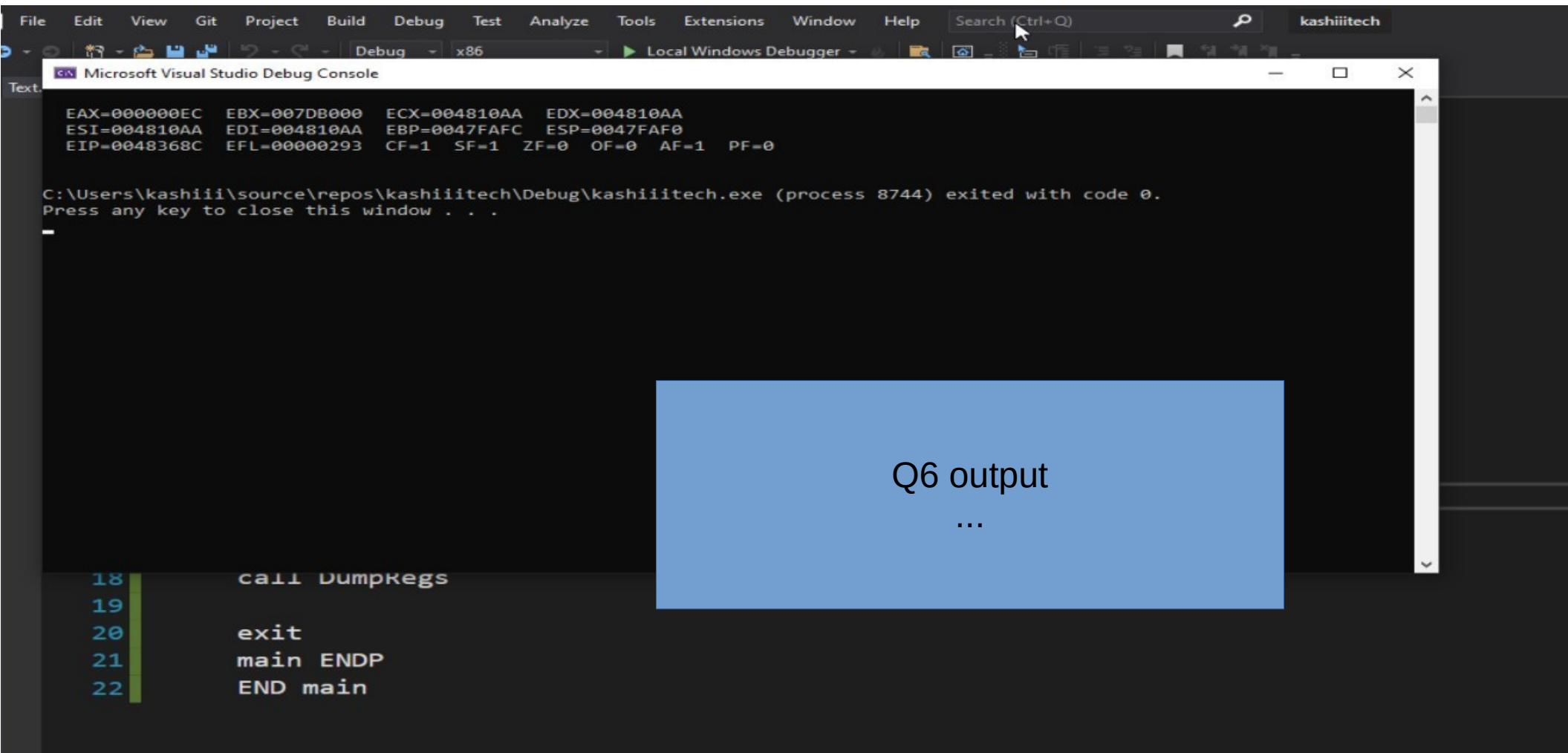
```
EAX=0000000A  EBX=00000000  ECX=003A10AA  EDX=0000000A
ESI=003A10AA  EDI=003A10AA  EBP=007BF86C  ESP=007BF860
EIP=003A36DB  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0
```

C:\Users\kashiii\source\repos\kashiiitech\Debug\kashiiitech.exe (process 216) exited with code 0.
Press any key to close this window . . .

```
1  INCLUDE Irvine32.inc
2  .data
3      u SBYTE -12
4      v SBYTE -2
5      w SBYTE 4
6      x SBYTE -6
7      y SBYTE -8
8      z SBYTE ?
9  .code
10     main PROC
11         mov eax,0
12         mov al,x
13         add al,y
14         add al,w
15         add al,u
16         sub al,v
17         mov z,al
18         call DumpRegs
19
20     exit
21     main ENDP
22     END main
```

I

Q6 Code




```
Text.asm 1 INCLUDE Irvine32.inc
2 .data
3 arrayB BYTE 60,70,80
4 arrayW WORD 150,250,350
5 arrayD DWORD 600,1200,1800
6
7 .code
8 main PROC
9 mov esi, 1
10 mov al, arrayB[esi * TYPE arrayB]
11 mov esi, 3
12 mov ax, arrayW[esi * TYPE arrayB]
13 mov esi, 1
14 mov bx, arrayW[esi * TYPE arrayW]
15 mov esi, 3
16 add bx, arrayW[esi * TYPE arrayW]
17 mov esi, 1
18
19 mov cx, arrayW[esi * TYPE arrayD]
20 mov esi, 3
21 add cx, arrayW[esi * TYPE arrayD]
22 call DumpRegs
23 exit
24 main ENDP
25 END main
```

TASK 7 CODE

...

Solution Explorer

Search Solution Explorer (Ctrl+;) 🔍

Solution 'kashiitech' (1 of 1 project)

- 📁 kashiitech
 - 📁 References
 - 📁 External Dependencies
 - 📁 Header Files
 - 📁 Resource Files
 - 📁 Source Files
 - 📄 Text.asm

Solution Explorer | Git Changes

Properties

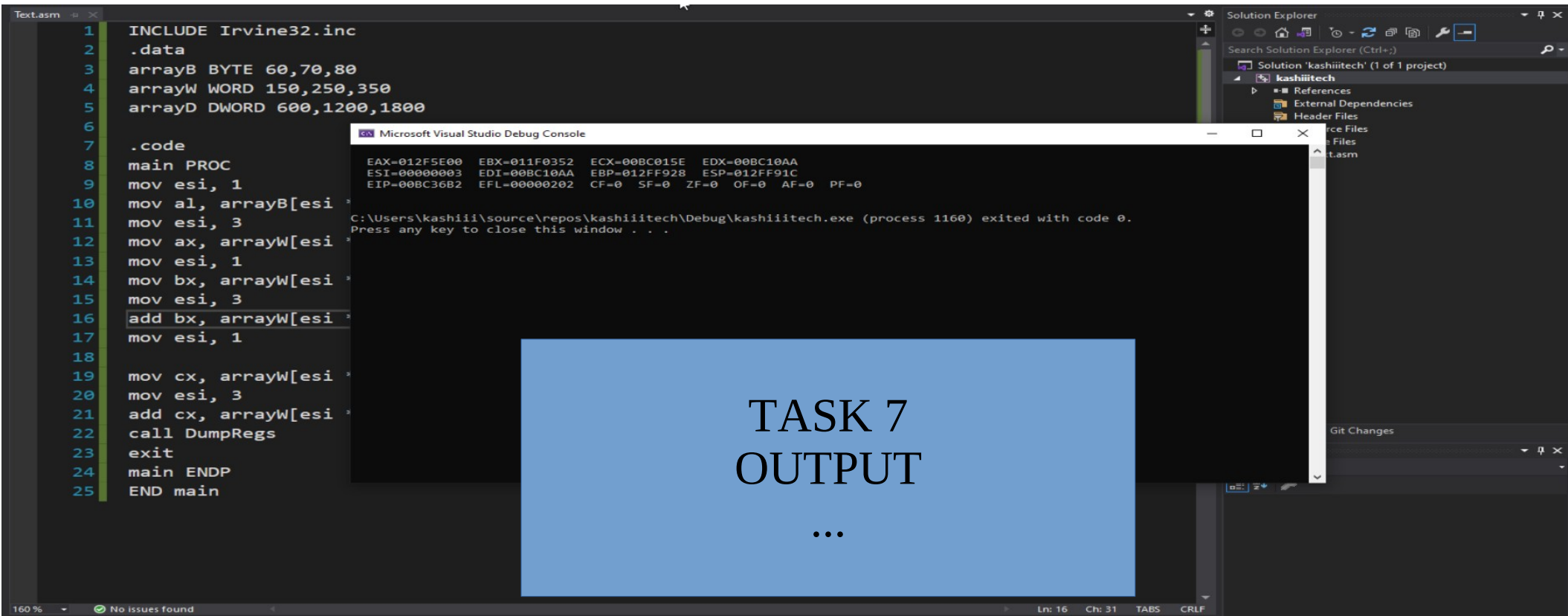
160 % No issues found Ln: 23 Ch: 5 TABS CRLF

Output

Show output from: Build

Build started...

12:00:00 Build started: Project: kashiitech Configuration: Debug Win32



The End

...