

HW5

- Due Feb 21 by 5pm
- Points 100
- Submitting a file upload
- File Types docx, pdf, asm, and lst
- Available Feb 2 at 8am - Feb 26 at 5pm

This assignment was locked Feb 26 at 5pm.

HW # 5: Theme: Data Definitions, Addressing Modes, Arrays

All main questions carry equal weight.

(Credit awarded to only those answers for which work has been shown.)

1. [Memory Map] Fill in the following memory diagram with the data provided below. Please assume that the data segment begins at 0x0072A300.

.data		
Rose	BYTE	011h
Magnolia	WORD	01234h
Cannas	DWORD	ABCDh, 41032h

Variable	Address	Byte Data
	0x0072A300	
	0x0072A301	
	.	
	.	

2. [Addressing Modes] Copy the following code into your assembly development environment and single-step through it. For each single step execution, submit the screenshot. For those instructions referencing memory, do the memory address computation by hand and typewrite the work showing the computation.

```
TITLE Addressing Modes                (main.asm)

INCLUDE Irvine32.inc

.data
    alpha    DWORD    0A5B5C5D5h, 8E376C7Ah
    beta     DWORD    3ABED9D2h, 21A220C2h
    gamma    DWORD    0DC71546Bh
.code

main PROC
    mov eax, 5ABEFh;                    Immediate
    mov ecx, eax;                      Register to Register
    mov edi, OFFSET beta;              Immediate
    mov [gamma], eax;                  Direct
    mov esi, gamma;                    Direct
    mov esi, 4;                        Immediate
    mov eax, beta[esi];                Indirect-offset
    mov ebx, OFFSET alpha;             Immediate
    mov eax, 4[ebx];                   Indirect-displacement
    mov eax, [ebx];                    Indirect
    mov eax, 4[ebx][esi];              Base-Indirect-displacement
exit
```

```
main ENDP  
END main
```

3. [Indirect addressing, Loop] Write a program that sums the elements of the following array. Use the loop instruction to write the program. Please use the “WriteInt” procedure, not “DumpRegs” to display the elements.

```
.data  
CloudArray  SWORD 11, 24, 3, 4, 15, 2, 7, 8, 19
```