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Q1.

```
.data
align 4
var1 BYTE 0x12
var2 WORD 0x3456
var3 DWORD 0x789ABCDE
arr1 DWORD 10, 21, 30, 41, 50, 61, 70, 81, 90, 101
str1 BYTE "Assembly Programming", 0
matrix DWORD 4 DUP(4 DUP(?)) ; 4x4 Matrix
uninit DWORD ?
```

```
Answer the Questions below

   1) Explain the effect of align 4 on var1, var2, and var3. You
      can create memory map and explain.
```

The ALIGN 4 directive forces var1 to start at memory addresses that are a multiple of 4. For example, if the memory address start at 0x1000. Then, var1 would be at 0x1000 since 0 is a multiple of 4. So, there would be no padding applied. Then var2 would be from 0x1001 to 0x1002 and var3 from 0x1003 to 0x1006. But, for example, if the memory address start at 0x1001. Then, there would be padding from 0x1001 to 0x1003 and var1 would be at 0x1004 since 4 is the next multiple of 4. Then var2 would be from 0x1005 to 0x1006 and var3 from 0x1007 to 0x100A.

Address	Value	Description
0x1000	12	var1
0x1001	56	var2
0x1002	34	var2
0x1003	DE	var3
0x1004	BC	var3
0x1005	9A	var3
0x1006	78	var3

Address	Value	Description
0x1001	00	padding
0x1002	00	padding
0x1003	00	padding
0x1004	12	var1
0x1005	56	var2
0x1006	34	var2
0x1007	DE	var3
0x1008	BC	var3
0x1009	9A	var3
0x100A	78	var3