Lab 5 (50 points)

**Data Definitions (10 points)**

Q1- Write a data section that contains a definition of each data type listed below. Initialize each variable to a value that is consistent with its data type.

**Data Type**

1. A variable L1, 1 byte, initialized to 2:

Answer: L2 db 2

1. A variable L2, a word size, initialized to 2000 (decimal)

Answer: L2 dw 2000

1. A variable L3, 1 byte, initialized to 110111 in binary

Answer: L3 db 110101b

1. A variable L4, 1 byte, initialized to BC in hex

Answer: L3 db 0BCh

1. A variable L5, double word, initialized to FFFF1C81 in hex

Answer: L5 dd 0FFFF1C8h

1. A variable L6, 1 byte, initialized to the ASCII code for “G”

Answer: L6 db “G”

1. A null-terminated L7, initialized to “Hello World”

Answer: L7 db’Hellow world!’,0

1. A variable L8, has 1000 bytes. Each byte initialized to 2

Answer: L8 times 1000 db 2

**Uninitialized Data Declaration (10 points)**

Q2- Write a (,bss) section that declare the following variables.

1. Uninitialized variable R1, 1 byte

Answer: R1 resb 1

1. Uninitialized variable R2, a word size

Answer: R1 resw 1

1. Uninitialized variable R3, 1 byte

Answer: R3 resb 1

1. Uninitialized variable R4, 1 byte

Answer: R4 resb 1

1. Uninitialized variable R5, double word

Answer: R5 resd 1

1. Uninitialized variable R6, 1 byte

Answer: R6 resb 1

1. Uninitialized null-terminated string R7 that could have up to 10 characters

Answer: R7 resb 10,0

1. Uninitialized variable R8, has 1000 bytes

Answer: R8 resb 1000

Q3- (10 points) What is the memory content for the following data section variables?

L1 db 0AAh, 0BBh

L2 dw 0CCDDh

L3 db 0EEh, 0FFh

L1 L2 L3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| AA | BB | CC | DD | EE | FF |

Q4- (10 points) What is the memory content for the following data section variables? Assume the memory start with “pixels” from the left side (8)

pixels times 2 db 0EA

x dd 00011000 00111000 00011001 11000100

blurb db “Good”, 0

buffer times 10 db 013h

min dw -17

pixels c4 19 38 18

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EA | EA | C4 | 19 | 38 | 18 | 47 | 6F | 6F | 64 | 00 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | EF | FF |

Q5: (10 points) What is the memory content for the following data and (.bss) sections variables?

section .data

first db 00h, 04Fh, 012h, 0A4h

second dw 165

section .bss

third resb db 3

first

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 00 | 4F | 12 | A4 | 00 | A5 | 3 | 3 | 3 |