5.1

```
-a100

0BA8:0100 mov ax, 0002  ; BIOS stuff

0BA8:0103 int 10   ;    | |

0BA8:0105 mov ah, 2  ;    | |

0BA8:0107 mov dx, 0a00  ;    | |

0BA8:010A mov bh, 0  ;    | |

0BA8:010C int 10   ;    | |

0BA8:010E mov ax, 0e00  ; BIOS service 0E, first character 0

0BA8:0111 int 10   ; Print character

0BA8:0113 inc al   ; Next

0BA8:0115 cmp al, 80  ; Compare if done?

0BA8:0117 jnz 0111   ; Not done: loop again

0BA8:0119 int 20   ; Yes: Back to DOS
```

5.2a

For the instruction: MOV AH, 00 and MOV AL, 02, AX is 0002, thus the BIOS service is

0, and the video mode is 2.

5.2b

Instruction MOV BL, 1A defines the screen color.

5.2c

Instruction MOV CX, 070D defines the length of the background color. When I changed

070D to 0011, I found the background color cover the screen gets shorter.

5.2d From the ASCII table, I found the 20h represent a "space". When I changed the instruction

from MOV AX, 0920 to MOV AX, 0924, I observed the outcome below:

-p $$$

AX=0924 BX=0027 CX=1111 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000 $$$$$$$

DS=0BA8 ES=0BA8 SS=0BA8 CS=0BA8 IP=0110 NV UP EI PL NZ NA PO NC $$$$$$$$$$

0BA8:0110 B402   MOV   AH,02 $$$$$$$$$$

-p $$$

However, the "$" only surrounded the data when IP = 0110.

From the instruction MOV AX, 0924 and the output I observed, I found that, AH has 09H

content as the BIOS service, AL has the 24h ("$") as ASCII character. And the numbers

of "$" showed in CX, which is 07D0h.

5.2e

 Instruction BX, 1A determines the color of characters and background. In order to display

the ASCII character in red on a white background, I changed the instruction to MOV BX,

74, where 7 represents white/grey and 4 represent red.

5.3

AL = 38 AH = EF BL = 8B BH = 15

5.6

```
A100

MOV  BL, AL

AND  AL, F0

MOV  CL, 4

ROR  AL, CL

ADD  AL, 30

MOV  AH, 0E

INT  10

MOV  AL, BL

AND  AL, 0F

ADD  AL, 31

INT  10

MOV  AL, BL

AND  AL, 0F

ADD  AL, 32

INT  10

MOV  AL, BL

AND  AL, 0F

ADD  AL, 33

INT  10

MOV  AL, BL

AND  AL, 0F

ADD  AL, 34

INT  10

INT  20
```

(a) SI = 0160 (b) Byte Ptr [SI+I] = 6 (c) Word Ptr [SI + 21 = 2800

(d) Word Ptr [SI + 51 = 7900 (e)AX = OE07 (0 BH = 07 (g) CL = 04

(h)DX=0160 (i)CF= 1