1.

a) Search a key element in a list of ‘n’ 16-bit numbers using the Binary search algorithm.

```
.model small

.data

.code

a dw 1022h,2045h,3004h,4055h,5006h

len dw ($-a)/2

key dw 3004h

m1 db 10,13,"search successful$"

m2 db 10,13,"search unsuccessful$"

mov ax,@data

mov ds,ax

mov bx,01h

mov dx,len

mov cx,key

cmp bx,dx

again:

 ja failure

 mov ax,bx

 add ax,dx

 shr ax,01h

 mov si,ax

 dec si

 add si,si

 cmp cx,a[si]

 jae bigger

 dec ax
 mov dx,ax

 jmp again

bigger:

 inc ax

je success

 mov bx,ax

 jmp again

success:

 jmp display

failure:

display:

 int 21h

 mov ah,4ch

 int 21h

 end
```

b) Read the status of eight input bits from the Logic Controller Interface and display ‘FF’ if it is

the parity of the input read is even; otherwise display 00.

```
.model small

.stack

.data

lea dx,m1

lea dx,m2

mov ah,09h

.code

m1 db 10,13,”Enter the input : $”

PA equ 9800H
```

```
PB equ 9801H

PC equ 9802H

CR equ 9803H

mov ax,@data

mov ds,ax

mov al,82H

mov dx,CR

out dx,al

lea dx,m1

mov ah,09H

int 21H

mov ah,01H

int 21H

mov dx,PB

in al,dx

add al,00H

jp down

mov al,00H

mov dx,al

jmp exit

down: mov al,0FFH

mov dx,PA

out dx,al

exit : mov ah,4ch

int 21H

end
```