1.

```
section .data
hello: db 'Hello World!',10     ;'Hello world!' plus a linefeed character
helloLen: equ $-hello           ; Length of the 'Hello World!' string

section .text
global _start

_start:
mov eax, 4                  ; This system call for write (sys_write)
mov ebx, 1                  ; File descriptor 1 - standard output
mov ecx, hello              ; Put the offset of hello in ecx
mov edx, helloLen           ; helloLen is a constand
int 80h                     ; invoke the system call
                            ; int is the assembly mnemonic for "interrupt"
                            ; processor was running in ring 3 protection level,
                            ; processor shift to ring 0(hardware protection disabled) now os checks what
                            ; we want from it when these values in these 4
                            ; registers os will display value on console present in ecx register and number of
                            ; characters are in edx register.
                            ; (80h/0x80 or 128 in decimal is the Unix System Call interrupt)

mov eax, 1
mov ebx, 0
int 80h
```

2.

```
(anaconda3) →  01-Assignment nasm -f elf64 hello.asm
(anaconda3) →  01-Assignment
```

3.

```
(anaconda3) →  01-Assignment ld -s -o hello hello.o
(anaconda3) →  01-Assignment
```

4.

```
(anaconda3) →  01-Assignment ./hello
Hello World!
(anaconda3) →  01-Assignment
```

5. int 80h that is equivalent to (80h/0x80 or 128 in decimal is the Unix System Call interrupt) is used to Invoke the system call. The processor was running in ring 3 protection level(the normal level for a process. The processor will switch to ring 0, hardware protection is disabled in this mode. This mean that the code will be executed from now on can do whatever it wants. Write everywhere in physical memory … etc. Now when interrupt is called the Operating see what the user want me to do it will see the values in the register and in this case we have write system call and whatever present in ecx register will be written on console and control goes back.