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a) It isn't good to use numeric addresses when writing instructions because numeric addresses ties/restricts you to a particular location in memory which can cause errors when addresses are updated.

b) The assembler produces two files

i) ~~Listing Files~~ Listing Files

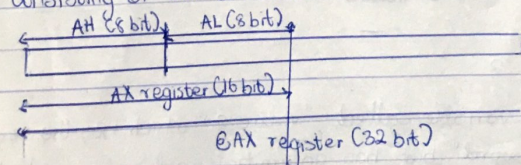
ii) Object file (file containing machine language but non-executable)

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a) Portability in programming languages involves how wide or the range of computer systems which can access the programming language.

b) The assembly language for x86 processors is different from AMD or Motorola 68000 because assembly language is specific to devices of a particular computer architecture, which means they cannot be accessible on a different processor.

c) The EAX register is used for arithmetic and logical operations. It is a 32-bit register which can be subdivided into 2 16-bit registers called AX which can also be sub-divided into an 8-bit register consisting of AH and AL.



3a) Segmentation is achieved by using directives which are embedded commands in the source code. They are

- code [used to describe the area with executable instructions]
- data [used to describe the area with variables declaration]
- stack [used to describe the area with stack pointers]

b) * Main Proc

This shows that the ~~main~~ procedure has been initialized, the variable "main" is used to name the procedure being executed.

* MOV AX, 47104

This moves 47104 [source code] into the AX register [destination]

* ADD EAX, 1270

This performs an arithmetic operation on the EAX register by adding 1270 to the EAX register

* MOV DS, AX

This moves the value of the AX register into the DS register

* main ENDP

This ends the procedure run time

or i) value 1 BYTE 60h

This declares a ~~var~~ variable called "value 1" which has the equivalent size of an ^{unsigned} byte and assigns the value or initializes the ~~var~~ variable with the value "60h"

ii) value 2 DWORD ?

This declares a variable called "value 2" which has the equivalent size of a "double word" but has an uninitialized value which would be initialized at run-time

iii) value 3 SBYTE

declares a variable called "value 3" which has the equivalent of a signed byte

~~all~~

and a series of values assigned to it

4

TITLE "A program that subtracts two integers" (Sub.asm)

INCLUDE Irvine32.inc
code

MAIN PROC

MOV AX, 2000h ; AX = 2000h

~~add~~ sub AX, 1000h ; AX = 1000h

call DumpRegs;

exit

main ENDP