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17/Engo2022  
Computer Engineering Assembly Language (06306) 2021

### Question 1

a. The reason why it is not a good idea is because it is easier for the CPU to access registers than numeric address and it executes instruction faster than numeric address. This is because address coded in the instruction would have to be updated whenever a new variable is inserted before existing ones.

b. What type of files <sup>are produced by</sup> the Assembler?  
It produces an object and listing files (.obj extension) & (.lst extension)

### Question 2

2b. The answer is no. This is assembly language is designed for a specific processor family. Up till date there are many assembly languages written and used for each processor family.

2c.

↓ 32-Bit	16-Bit	8-Bit (high)	8-Bit (low)	↓
AX	AX	AH	AL	Ax - Accumulator
EBX	BX	BH	BL	Bx - Base
ECX	CX	CH	CL	Cx - Counter
EDX	DX	DH	DL	Dx - Data

AX - This is the primary accumulator which is used in input/output and mostly arithmetic instructions.

BX - This is the base register which is used in indexed addressing.

CX - This is the counter register, as the ECX. It stores the loop count in iterative operations.

Dx - is the data register which is also used in input/output operations. It is also used with the Ax register for multiply and divide operations involving large values.

### Question 3

3a When an assembly-language program is assembled, the translation that the assembler carries out is essentially the construction of the text segment and the data segment.

This is achieved by using directives which are embedded commands in the source code. They are

- code { It is used to describe the executable instruction area }
- ~~Stack~~ { It is used to describe the stack pointer area }
- data { It is used to describe the variable declaration area }