

Assembly Homework 5

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Your task is to write a **C program** to **obtain** and **print** pieces of information about your computer's processor using **inline assembly** and the **cpuid** assembly instruction. The required information is:

Mandatory:

1. CPU vendor ID string,
2. The ASCII string name of your CPU,
3. The size of the **L2** cache of your CPU. The available value is in kilobytes so don't forget to add KB when you are printing the value.
4. Whether or not your CPU supports **SSE instruction set**. You can check the SSE flag in order to check this property. Print "**SSE supported**" if SSE instruction set is supported by your CPU and "**SSE not supported**" otherwise. (SSE stands for Streaming SIMD Extensions. Using this instruction set one can run a single operation on multiple data in parallel. To find out more about SSE visit [this website](#))
5. Whether or not your CPU supports **AVX instruction set**. You can check the AVX flag to do this. Print "**AVX supported**" if AVX instruction set is supported by your CPU and "**AVX not supported**" alternatively. (AVX is a more recent version of SSE instruction set. You can obtain more information about AVX by visiting [this website](#))

Optional (extra score):

6. All versions of the **SSE instruction set** supported by your CPU. There are 7 versions of SSE instruction set which are: SSE, SSE2, SSE3, SSSE3, SSE4A, SSE4.1, and SSE4.2. Print all supported versions or print "**SSE not supported**" if your processor doesn't support SSE.
 7. The latest version of the **AVX instruction set** supported by your CPU. There are 3 versions of AVX instruction set: AVX, AVX2, and AVX512. Print all supported versions or "**AVX not supported**" if none is supported by your machine.
- You must upload the following on courses.kntu.ac.ir
 - a single **C file**, and
 - a **Makefile** for compilation.

- You must only use inline assembly code to obtain the required information. You are not allowed to print anything in the inline assembly code. Your inline assembly code must return the received result to the C program to be printed.
- You are not allowed to use the available C interfaces (e.g. the function declared in **cpuid.h**).
- Google "**x86 cpuid**" to find out more about the **cpuid** instruction. You may also visit:
 - [The CPUID Instruction](#)
 - [x86 architecture CPUID](#).

Example (mandatory):

input:

[no inputs]

output:

GenuineIntel
Intel(R) Core(TM) i7-4510U CPU @ 2.00GHz
256 KB
SSE Supported
AVX Supported

Example (optional):

input:

[no inputs]

output:

GenuineIntel
Intel(R) Core(TM) i7-4510U CPU @ 2.00GHz
256 KB
SSE SSE2 SSE3 SSSE3 SSE4A SSE4.1 SSE4.2 Supported
AVX AVX2 Supported