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**Assignment Title:** ARCHITECTURE  
**Course Title:** Computer Architecture and Organization II  
**Course Code:** CSC 310

**Question**

Make Comparative analysis of Assembly language, Machine Language and High level languages respectively.

**Solution**

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| **Basis of Difference** | **Machine Language** | **Assembly Language** |
| **Level of programming language** | Machine language ranks as the lowest level programming language. In this language, instructions are executed directly via the Central Processing Unit | Assembly language refers to a low-level programming language that needs an assembler for converting the instructions to machine or object codes. |
| **Ease of comprehension** | Machine language cannot be deciphered by humans and can be comprehended only by computers. | Assembly language can be understood, used, and applied by humans. |
| **Nature of syntax** | Machine languages comprise of binary digits 0s and 1s | Assembly languages have a syntax that is similar to the English language; therefore, they can be understood by programmers and users alike |
| **Dependency** | Machine languages are platform-dependent, and their features vary accordingly | Assembly language comprises of standard instruction sets. |
| **Areas of application** | Machine language serves as a machine code only. | Assembly languages are used for real-time systems and microprocessor-based applications/ devices |
| **Usage of mnemonics** | Machine language uses sequences of bits for giving commands. One depicts the true or on the state; on the other hand, zero depicts the false or off state. The conversion of high-level programming language to machine language is dependent on the CPU. “Mnemonics” are not required in machine language | Assembly language does not require users to remember op-codes. It uses “mnemonics” names and symbols rather than raw sequences of bits. The codes in assembly languages are slightly more readable and can be mapped to machine code by humans |
| **Generation of programming language** | Machine languages are first-generation programming languages | Assembly languages are second-generation programming languages |