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**18/SCI01/106**

**CSC 310**

1. A translator is a programming language processor that converts a computer program from one language to another. It takes a program written in source code and converts it into machine code. It discovers and identifies the error during translation. It translates high-level language program into a machine language program that the central processing unit (CPU) can understand. It also detects errors in the program.
2.

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| S/N | BASIS OF COMPARISON | ASSEMBLER | COMPILER  | INTERPRETER |
| 1. |  | Software that converts programs written in assembly language to machine language | Software that converts programs written in a high level language to machine language  | Software that translates a high level language program into machine language |
| 2. | Method | Assembling a program is performed using a simple one-to-one mapping from assembly code to machine code | Translates the entire programming statement and execute it later | Translates programming statement line by line and executes it immediately |
| 3. | Input | Converts assembly language program to machine language | Converts the whole high level language program to machine language at a time. It takes and entire program at a time. | Converts the high level language to machine language line by line. It takes a single line of code or instruction at a time. |
| 4. | Output |  | It generates intermediate object code | It does not produce any intermediate object code |
| 5. | Running time |  | Compiled code run faster | Interpreted code run slower |
| 6. | Working mechanism |  | The compilation is done before execution | Compilation and execution takes place simultaneously  |
| 7. | Used by | Used by assembly language | Used by C, C++ | Used by Ruby, Perl, Python, PHP |

1. There is need for high level langauages because the main advantage of high-level languages over low-level languages is that they are easier to read, write, and maintain. Ultimately, programs written in a high-level language must be translated into machine language by a compiler or interpreter. It enables development of a program in a much more user-friendly programming context and is generally independent of the computer's hardware architecture. A high-level language has a higher level of abstraction from the computer, and focuses more on the programming logic rather than the underlying hardware components such as memory addressing and register utilization.