*/**
* hw01q1- Programming Exercise
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* Completion t ime : 20 hours
*
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*/

Programming Exercise (50 points)

1. Review the lecture slides which discuss Very Simple Programming Languages (VSPL). Next, review VSPL as defined below and identify which sequences are valid.

    ```
    <letter>        ::= a | b | c | d | e
    <LETTER>        ::= V | W | X | Y | Z
    <number>        ::= 0 | 1 | 2 | 3 | 4
    <letters>       ::= <letter> | <letter> <letters>
    <LETTERS>       ::= <LETTER> | <LETTER> <LETTERS>
    <numbers>       ::= <number> | <number> <numbers>
    <sequence>      ::= <letters> <LETTERS> <numbers> | <LETTERS> <letters> <numbers>
    ```

    Which of the following are valid sequences? You must clearly identify for each of the following sequences, which are valid and which are invalid. Each sequence is worth 1 point. Submit your answer as hw01q1.pdf.   [10 points]

    1. CSE240 – **Invalid**: CSE is not in the given VSPL.
    2. ebcXYZ125 –**Invalid**: 5 is not in the given VSPL.
    3. XYZcde344 – **Valid**: It has the rule of <sequence>, starting with the three uppercase letters (XYZ), then the group of lowercase letters (cde), and then a group of numbers (344).
    4. VWXa10 – **Valid**: It has the second rule of <sequence>, which is <LETTERS> <letters> <numbers>. VWX matches <LETTERS>, which breaks down to <LETTERS><LETTERS>. The "a" matches <letters>, which we can pick from <letter> or <letter><letters>. The 10 matches <numbers>, and that breaks down to <number> <numbers>.
    5. edc135790Z – **Invalid**: there is no 5,7, or 9 for numbers.
    6. dYaZeWkV – **Invalid**: The numbers group is missing and there is no "K" in the VSPL above. Also, the first lower case (d) is followed by upper case, and then lower case "a."

7. Zbad00 – **Valid**: This sequence matches the pattern <LETTERS>(Z), <letters> (bad), and then <numbers><numbers> (00).
8. aZ21 – **Valid**: This follows the <letters> <LETTERS> <numbers>, starting with <letter>(a), then <LETTER>(Z), followed by <number><numbers> (21).
9. XYZabc23 – **Valid**: this sequence matches the <LETTERS>, <letters>, and <numbers> pattern.
10. Ey701 – **Invalid**: there is no "E" in the VSPL above.