**Reading (VIPERS FORM)**

Use this form to record key ideas from reading to prepare for the lessons.  make sure you upload the completed form in TEAMS (Reading section)

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| Topic you prepared: | Links used: |
| Luhn algorithm | [Luhn algorithm - Wikipedia](https://en.wikipedia.org/wiki/Luhn_algorithm) |

Terms: Write any new technical term and their meaning, add more rows if needed.

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| **Terms** | **Meaning** |
| Luhn algorithm | Modulus 10 - formula used to validate a variety of identification numbers such as credit cards. |
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| **What can we understand from the topic?** |
| Using the example of 7992739871  if the number already contains the check digit, drop that digit to form the "payload." The check digit is most often the last digit.  With the payload, start from the rightmost digit. Moving left, double the value of every second digit (including the rightmost digit).  Sum the digits of the resulting value in each position (using the original value where a digit did not get doubled in the previous step).  The check digit is calculated by {\displaystyle (10-(s\operatorname {mod} 10))\operatorname {mod} 10}(**10** – (**S mod 10**)) **mod 10**. This is the least number (possibly zero) that must be added to**S{\displaystyle s}**to make a multiple of 10. Other valid formulas giving the same value are {\displaystyle (1000-s)\operatorname {mod} 10} (**1000 – s**) **mod 10** and **10**[**s/10**]{\displaystyle 10\lceil s/10\rceil -s}. |

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| **How this topic linked to other previous topics ? What conclusions can we draw from this topic?** |
| We can create programs to validate other sections of code as well as many types of verifiers |

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| **What are the strengths / applications of this topic? (e.g. accuracy, steps of calculations, time or space complexity, used when …., hardware and software needs, ethical or legal issues, ….etc.)** |
| We can create validation systems with larger numbers and will detect any single digit errors. |

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| **What are the limitations / drawbacks of this this topic (e.g. problems, limited accuracy, too many steps, too complex, cannot be used when, hardware requirements, ethical and legal issues, ….. etc.)** |
| It wont detect transposition of 2 digit sequence eg 09 or 90. |

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| **Write a summary of the topic in 50 words** |
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