Name: VEN THON

ID: e20191250

1. Important of theory information:

. To learn basic, mathematical concepts, e.g. sets, functions, and counting.

. To be familiar with formal mathematical reasoning, e.g. logic, proofs.

. To improve problem solving skills, e.g. induction, recursion.

. To see the connections between discrete mathematical and computer science.

1. Proposition and true value of proposition:

. proposition is a statement that is either true or false but not both (some sentences are not statements)

. the true value of proposition is, if a proposition is true, then we say it has a truth value of **"true"**; if a proposition is false, its truth value is "false".

1. If we have this expression “5 < 7 and 8 modulo 3 = 1:

. Yes, It is a statement

. Yes, it is a proposition

. The true value of this proposition is 0.

1. Draw the true table if we have 3 symbols (parameter):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A | B | C |  |  |
| T | T | T |  |  |
| T | T | F |  |  |
| T | F | T |  |  |
| T | F | F |  |  |
| F | T | T |  |  |
| F | T | T |  |  |
| F | F | F |  |  |
| F | F | F |  |  |

1. Result of a implication b(1)” ,then”(1) and c” is:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A | B | C | A |  |
| T | T | T | T | T |
| T | T | F | T | F |
| T | F | T | F | F |
| T | F | F | F | F |
| F | T | T | T | T |
| F | T | F | T | F |
| F | F | T | T | T |
| F | F | F | T | F |

1. The result of “a biconditional b(1)”then “(1)xor c” is:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A | B | C | A |  |
| T | T | T | T | F |
| T | T | F | T | T |
| T | F | T | F | T |
| T | F | F | F | F |
| F | T | T | F | T |
| F | T | F | F | F |
| F | F | T | T | F |
| F | F | F | T | T |

1. Tautology is [formula](https://en.wikipedia.org/wiki/Well-formed_formula) or assertion that is true in every possible [interpretation](https://en.wikipedia.org/wiki/Interpretation_(logic)).

Prof that: “R V (notR)” is tautology:

|  |  |  |
| --- | --- | --- |
| R | ¬R | R∨(¬R) |
| T | T | T |
| T | F | T |
| F | T | T |
| F | T | T |

A tautology is a proposition that is always true.