**Compound Boolean Expressions**

**&& (and)**

|  |  |  |
| --- | --- | --- |
| **A** | **B** | **A && B** |
| T | T | T |
| T | F | F |
| F | T | F |
| F | F | F |

**A - Bank**

**B - Grocery Store**

**|| (or)**

|  |  |  |
| --- | --- | --- |
| **A** | **B** | **A || B** |
| T | T | T |
| T | F | T |
| F | T | T |
| F | F | F |

**! (not)**

|  |  |
| --- | --- |
| **A** | **!A** |
| T | F |
| F | T |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| **A** | **B** | **A && B** | **!(A && B)** |
| T | T | T | F |
| T | F | F | T |
| F | T | F | T |
| F | F | F | T |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A** | **B** | **!A** | **!B** | **!A || !B** |
| T | T | F | F | F |
| T | F | F | T | T |
| F | T | T | F | T |
| F | F | T | T | T |

DEMORGAN'S LAW:

!(A && B) is the same as !A || !B

!A && !B is the same as !(A || B)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **A** | **B** | **!A** | **!B** | | **!A && !B** | |
| T | T | F | F | | F | |
| T | F | F | T | | F | |
| F | T | T | F | | F | |
| F | F | T | T | | T | |
| **A** | **B** | **A || B** | | **!(A || B)** | |
| T | T | T | | F | |
| T | F | T | | F | |
| F | T | T | | F | |
| F | F | F | | T | |