ECED3403 – Assignment 5

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# Testing

### CEX evaluates to TRUE

**Purpose:** Checks for successful implementation of CEX’s TRUE evaluation.

**Configuration:** The below xme file is loaded into the emulator. CEX is evaluated with the condition EQ and the zero flag set. CEX has 2 true instructions and 2 false instructions. Because the code structure is the same, this test will be valid for all conditions.

A screen shot of a computer

Description automatically generated

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| --- | --- |
|  |  |
| **Expected Results:** | **Actual Results:** |
| The two true instructions should be executed, while the two false instructions should be ignored. R0 and R1 should be set to 0011. | A black screen with white text  Description automatically generated |

**Pass/Fail:** PASS

### CEX evaluates to FALSE

**Purpose:** Checks for successful implementation of CEX’s FALSE evaluation.

**Configuration:** The below xme file is loaded into the emulator. CEX is evaluated with the condition EQ and the zero flag cleared. CEX has 2 true instructions and 2 false instructions. Because the code structure is the same, this test will be valid for all conditions.

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| **Expected Results:** | **Actual Results:** |
| The two true instructions should be ignored, while the two false instructions should be executed. R0 and R1 should be set to 0022. |  |

**Pass/Fail:** PASS

### CEX evaluates with 0 TRUE instructions

**Purpose:** Checks for CEX executing TRUE instructions with no FALSE instructions.

**Configuration:** The below xme file is loaded into the emulator. CEX is evaluated with the condition EQ and the zero flag set. CEX has 0 true instructions and 2 false instructions.

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| **Expected Results:** | **Actual Results:** |
| * The emulator should change the 0 number of true instructions to 1, like in Dr. Hughes’ emulator. This is because CEX cannot execute with 0 true instructions. * The first instruction setting R0 to 0x0011 should execute. The two following instructions setting R1 and R2 to 0x0011, should be ignored. * The instruction after the two false instructions, setting R3 to 0x0022, should execute. |  |

**Pass/Fail:** PASS

### CEX evaluates with 0 FALSE instructions

**Purpose:** Checks for CEX executing TRUE instructions with no FALSE instructions.

**Configuration:** The below xme file is loaded into the emulator. CEX is evaluated with the condition EQ and the zero flag cleared. CEX has 2 true instructions and 0 false instructions.

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| **Expected Results:** | **Actual Results:** |
| * The two true instructions should be executed. * The next instruction setting R3 to 0x0022 should execute as well, because there is 0 number of false instructions for CEX. |  |

**Pass/Fail:** PASS

### CEX evaluates with 0 FALSE instructions

**Purpose:** Checks for CEX executing TRUE instructions with no FALSE instructions.

**Configuration:** The below xme file is loaded into the emulator. CEX is evaluated with the condition EQ and the zero flag cleared. CEX has 2 true instructions and 0 false instructions.

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|  |  |
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| **Expected Results:** | **Actual Results:** |
| * The two true instructions should be executed. * The next instruction setting R3 to 0x0022 should execute as well, because there is 0 number of false instructions for CEX. | A black screen with white text  Description automatically generated |

**Pass/Fail:** PASS

### CEX is removed when branching occurs

**Purpose:** Checks for CEX executing TRUE instructions with no FALSE instructions.

**Configuration:** The below xme file is loaded into the emulator. CEX is evaluated with the condition EQ and the zero flag set. CEX has 2 true instructions and 2 false instructions. One of the true instructions is BL.

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| **Expected Results:** | **Actual Results:** |
| * During CEX’s true instruction, R0 is set to 0x0011. * When BL occurs successfully, CEX is turned off. At the branch, R1 is set to 0x0011. LR is restored to PC. * The CEX’s false instructions, which would be ignored if branching did not occur, will be executed. This will set R2 to 0x0011 and R3 to 0x0022. |  |

**Pass/Fail:** PASS

### CEX persists when branching does not occur

**Purpose:** Checks for CEX executing TRUE instructions with no FALSE instructions.

**Configuration:** The below xme file is loaded into the emulator. CEX is evaluated with the condition EQ and the zero flag cleared. CEX has 2 true instructions and 0 false instructions. One of the true instructions is BN.

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| **Expected Results:** | **Actual Results:** |
| * During CEX’s true instruction, R0 is set to 0x0011. * When BN does not occur, CEX persists. * The CEX’s false instructions, which would be ignored if branching did not occur, will continue to not be executed. This will leave R2 and R3 to 0x0000. |  |