***OASM Structure***

***Instruction set:***

**Instruction Addressing Flags op1 op2 |**

**no\_op** (0xF0F0) xxx xxx xxx xxx |

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**mem** (0x1000) 0x0000 0x0000 addr/reg value/addr/reg |

**push** (0x1001) 0x0000 0x0000 value/addr/reg xxx |

**pop**  (0x1002) 0x0000 0x0000 value/addr/reg xxx |

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**inc**  (0x1100) 0x0000 0x0000 addr/reg xxx |

**dec**  (0x1101) 0x0000 0x0000 addr/reg xxx |

**add** (0x1102) 0x0000 0x0000 addr/reg value/addr/reg |

**sub** (0x1103) 0x0000 0x0000 addr/reg value/addr/reg |

**mul** (0x1104) 0x0000 0x0000 addr/reg value/addr/reg |

**div** (0x1105) 0x0000 0x0000 addr/reg value/addr/reg |

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***Addressing modes:***

**mode operands description |**

**0x0000** (addr, const\_val) const\_val to addr |

**0x0001** ([addr], const\_val) const\_val to mem pointed by addr content |

**0x0002** (reg , const\_val) const\_val to reg |

**0x0003** ([reg] , const\_val) const\_val to mem pointed by reg content |

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**0x0004** (addr1, addr2) addr2 content to addr1 |

**0x0005** ([addr1], addr2) addr2 content to mem pointed by addr1 content |

**0x0006** (reg, addr) addr content to reg |

**0x0007** ([reg], addr) addr content to mem pointed by reg content |

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**0x0008** (addr1, [addr2]) mem pointed by addr2 content to addr1 |

**0x0009** ([addr1], [addr2]) mem pointed by addr2 content to mem pointed by addr1 content |

**0x000A** (reg, [addr]) mem pointed by addr content to reg |

**0x000B** ([reg], [addr]) mem pointed by addr content to mem pointed by reg content |

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**0x000C** (addr1, [reg]) mem pointed by reg content to addr1 |

**0x000D** ([addr1], [reg]) mem pointed by reg content to mem pointed by addr1 content |

**0x000E** (reg, [reg]) mem pointed by reg content to reg |

**0x000F** ([reg1], [reg2]) mem pointed by reg2 content to mem pointed by reg1 content |

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**0x0010** (const\_val) Treat value as constant |

**0x0011** (addr) Take addr content |

**0x0012** (reg) Take reg content |

**0x0013** ([addr]) Take mem pointed by addr content |

**0x0014** ([reg]) Take mem pointed by reg content |

**0x0015** (&addr) Take addr value |

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**0x0016** (addr1, &addr2) addr2 value to addr1 |

**0x0017** ([addr1], &addr2) addr2 value to mem pointed by addr1 content |

**0x0018** (reg, &addr) addr value to reg |

**0x0019** ([reg1], &addr) addr value to mem pointed by reg1 content |

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***Register Layout:***

**Memory map |**

| 0x0000 | 0x0001 | 0x0002 | 0x0003 | 0x0004 | 0x0005 | 0x0006 | 0x0007 | 0x0008 | 0x0009 | 0x000A | 0x000B | 0x000C | 0x000D | 0x000E | 0x000F |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NP** | **RV** | **CF** | **IP** | **DR** | **ES** | **FL** | **SP** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** |
| 0x0010 | 0x0011 | 0x0012 | 0x0013 | 0x0014 | 0x0015 | 0x0016 | 0x0017 | 0x0018 | 0x0019 | 0x001A | 0x001B | 0x001C | 0x001D | 0x001E | 0x001F |
| **R0** | **R1** | **R2** | **R3** | **R4** | **R5** | **R6** | **R7** | **R8** | **R9** | **R10** | **R11** | **R12** | **R13** | **R14** | **R15** |
| 0x0020 | 0x0021 | 0x0022 | 0x0023 | 0x0024 | 0x0025 | 0x0026 | 0x0027 | 0x0028 | 0x0029 | 0x002A | 0x002B | 0x002C | 0x002D | 0x002E | 0x002F |
| **R16** | **R17** | **R18** | **R19** | **R20** | **R21** | **R22** | **R23** | **R24** | **R25** | **R26** | **R27** | **R28** | **R29** | **R30** | **R31** |

| **Special Registers:**  **NP** -> Null Pointer  **RV** -> Return Value  **CF** -> Compare Flag  **IP** -> Instruction Pointer  **DR** -> Division Reminder  **ES** -> Exit Status  **FL** -> Flags  **SP** -> Stack Pointer | **General Registers:**  **NP** -> Null Pointer  **RV** -> Return Value  **CF** -> Compare Flag  **IP** -> Instruction Pointer  **DR** -> Division Reminder  **ES** -> Exit Status  **FL** -> Flags  **SP** -> Stack Pointer |
| --- | --- |