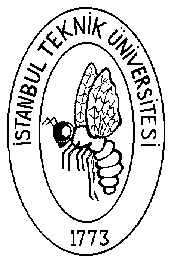
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S3** | **S2** | **S1** | **S0** | **Cin** | **Operation** | **Function** |
| 0 | 0 | 0 | 0 | 0 | F ← A + B | Addition |
| 0 | 0 | 0 | 0 | 1 | F ← A + B + 1 | Add with carry |
| 0 | 0 | 0 | 1 | 0 | F ← A + | Subtract with borrow |
| 0 | 0 | 0 | 1 | 1 | F ← A + + 1 | Subtraction |
| 0 | 0 | 1 | 0 | 0 | F ← A | Transfer A |
| 0 | 0 | 1 | 0 | 1 | F ← A + 1 | Increment A |
| 0 | 0 | 1 | 1 | 0 | F ← A - 1 | Decrement A |
| 0 | 0 | 1 | 1 | 1 | F ← A | Transfer A |
| 0 | 1 | 0 | 0 | 0 | F ← A ∧ B | AND |
| 0 | 1 | 0 | 0 | 1 | F ← | NAND |
| 0 | 1 | 0 | 1 | 0 | F ← A ∨ B | OR |
| 0 | 1 | 0 | 1 | 1 | F ← | NOR |
| 0 | 1 | 1 | 0 | 0 | F ← A ⊕ B | XOR |
| 0 | 1 | 1 | 0 | 1 | F ← | XNOR |
| 0 | 1 | 1 | 1 | 0 | F ← | Complement |
| 0 | 1 | 1 | 1 | 1 | F ←A | Transfer |
| 1 | 0 | x | 0 | x | F ←cil | Circular left shift |
| 1 | 0 | x | 1 | x | F ←ashl / shl | Arithmetic/Logic left shift |
| 1 | 1 | 0 | 0 | x | F ←shr | Logic right shift |
| 1 | 1 | 0 | 1 | x | F ←cir | Circular right shift |
| 1 | 1 | 1 | 0 | x | F ←ashr | Arithmetic right shift |



ISTANBUL TECHNICAL

UNIVERSITY

COMPUTER ENGINEERING

COMPUTER ORGANIZATION

PROJECT #3 REPORT

**Group 42**

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**BUS1 BUS2 AC-INPR Select**

|  |  |  |  |
| --- | --- | --- | --- |
| s2 | s1 | s0 | Out |
| 0 | 0 | 0 | --- |
| 0 | 0 | 1 | AR |
| 0 | 1 | 0 | PC |
| 0 | 1 | 1 | DR |
| 1 | 0 | 0 | AC |
| 1 | 0 | 1 | IR |
| 1 | 1 | 0 | TR |
| 1 | 1 | 1 | Memory |

|  |  |
| --- | --- |
| ac-inpr\_select | Out |
| 0 | AC |
| 1 | INPR |

|  |  |
| --- | --- |
| s3 | Out |
| 0 | AR |
| 1 | PC |

**Memory Control**

|  |  |
| --- | --- |
| mem\_w/r | Func. |
| 0 | Write |
| 1 | Read |

**ALU Select Inputs**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **LD** | **INR** | **CLR** |
| **AR** | D’7 I T3 + R’ T2 + R’ T0 | D5 T4 | R T0 |
| **PC** | D4 T4 + D5 T5 | R’T1 + RT2 + D6T6 + r(B1+ B2+ B3+ B4) + p(B8+ B9) | R T1 |
| **DR** | T4 (D0+ D1+ D2+ D6) | D6 T5 | **-** |
| **AC** | T5(D0+ D1+ D2)+pB11+ r(B6+ B7+ B9) | pB5 | rB11 |
| **TR** | T0 R | **-** | **-** |
| **IR** | T1 R’ | **-** | **-** |

**D7 I’ T3 = r, D7 I T3 = p, IR(i) = Bi ,I = IR(15)**