16 bit Addition:

| **MEMORY ADDRESS** | **MNEMONICS** | **COMMENTS** |
| --- | --- | --- |
| 2000 | LHLD 2050 | H-L ← 2050 |
| 2003 | XCHG | D H & E L |
| 2004 | LHLD 2052 | H-L ← 2052 |
| 2007 | DAD D | H ← H+D & L ← L+E |
| 2008 | SHLD 3050 | L → 3050 & H → 3051 |
| 200B | HLT | Stops execution |

16 bit Multiplication:

| **MEMORY ADDRESS** | **MNEMONICS** | **COMMENTS** |
| --- | --- | --- |
| 2000 | LHLD 2050 | Load H-L pair with data of address 2050 and 2051 |
| 2003 | SPHL | SAVE IT IN STACK POINTER |
| 2004 | LHLD 2052 | Load H-L pair with data of address 2052 and 2053 |
| 2007 | XCHG | EXCHANGE HL AND DE PAIR CONTENT |
| 2008 | LXI H,0000H | H<-00H,L<-00H |
| 200B | LXI B,0000H | B<-00H,C<-00H |
| 200E | DAD SP |  |
| 200F | JNC 2013 | JUMP NOT CARRY |
| 2012 | INX B | INCREMENT BC BY 1 |
| 2013 | DCX D | DECREMENT DE BY 1 |
| 2014 | MOV A,E | A<-E |
| 2015 | ORA D | OR THE CONTENT OF ACCUMULATOR AND D REGISTER |
| 2016 | JNZ 200E | JUMP NOT ZERO |
| 2019 | SHLD 2054 | L<-2054,H<-2055 |
| 201C | MOV L,C | L<-C |
| 201D | MOV H,B | B<H |
| 201E | SHLD 2056 | L<-2055,H<-2056 |
| 2021 | HLT | TERMINATES THE PROGRAM |

16 bit Subtraction:

| **ADDRESS** | **MNEMONICS** | **COMMENTS** |
| --- | --- | --- |
| 2000 | LHLD 2050 | Load H-L pair with address 2050 |
| 2003 | XCHG | EXCHANGE H-L PAIR WITH D-E PAIR |
| 2004 | LHLD 2052 | Load H-L pair with address 2052 |
| 2007 | MVI C, 00 | C<-00H |
| 2009 | MOV A, E | A<-E |
| 200A | SUB L | A<-A-L |
| 200B | STA 2054 | 2054<-A |
| 200E | MOV A, D | A<-D |
| 200F | SBB H | SUBTRACT WITH BORROW |
| 2010 | STA 2055 | 2055<-A |
| 2013 | HLT | TERMINATES THE PROGRAM |

16 bit Division:

| **MEMORY ADDRESS** | **MNEMONICS** | **COMMENTS** |
| --- | --- | --- |
| 2000 | LXI B, 0000H | INITIALISE QUOTIENT AS 0000H |
| 2003 | LHLD 2052H | LOAD THE DIVISOR IN HL |
| 2006 | XCHG | EXCHANGE HL AND DE |
| 2007 | LHLD 2050 | LOAD THE DIVIDEND |
| 200A | MOV A, L | A<-L |
| 200B | SUB E | A<-A-E |
| 200C | MOV L, A | L<-A |
| 200D | MOV A, H | A<-H |
| 200E | SBB D | A<-A-D |
| 200F | MOV H, A | H<-A |
| 2010 | JC 2017 | JUMP WHEN CARRY |
| 2013 | INX B | B<-B+1 |
| 2014 | JMP 200B |  |
| 2017 | DAD D | HL<-DE+HL |
| 2018 | SHLD 2056 | HL IS STORED IN MEMORY |
| 201B | MOV L, C | L<-C |
| 201C | MOV H, B | H<-B |
| 201D | SHLD 2054 | HL IS STORED IN MEMORY |
| 2020 | HLT | TERMINATES THE PROGRAM |