1. MARS MIPS Assembly Code

#Josh Hayter

#CECS 225

#Homework3

#Sotheanith Sok

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#Homework 3: MIPS Assembly Arithmetic

#Exercise 1: C = A + B

addi $16, $0, 50

addi $17, $0, 120

add $18, $16, $17

#Exercise 2: D = A - B

addi $16, $0, -30

addi $17, $0, -52

sub $19, $16, $17

#Exercise 3: F = (A + B - C)-(D - E)

addi $16, $0, 20

addi $17, $0, 60

addi $18, $0, 120

addi $19, $0, -150

addi $20, $0, -200

add $8, $16, $17

sub $9, $8, $18

sub $10, $19, $20

sub $21, $9, $10

#Exercise 4: F = F - A + B

addi $16, $0, 20

addi $17, $0, 30

addi $21, $0, 0

sub $8, $21, $16

add $21, $8, $17

#Exercise 5: G = B - A

addi $16, $0, 0x89AB

addi $17, $0, 0x98B3

sub $22, $17, $16

#Exercise 6: H = B + B + B + B + B

addi $17, $0, 0x1D

add $9, $17, $17

add $9, $9, $17

add $9, $9, $17

add $23, $9, $17

#Exercise 7: A = A - 0x1C

addi $16, $0, 25

sub $16, $16, 0x1C

#Exercise 8: D = (G - E) + 200 - (F - B - 90)

addi $17, $0, 40

addi $20, $0, 100

addi $21, $0, 70

addi $22, $0, 240

sub $8, $22, $20

add $9, $8, 200

sub $8, $21, $17

sub $10, $8, 90

sub $19, $9, $10

#Exercise 9: A = F + (D - G)

addi $19, $0, 456

addi $21, $0, 123

addi $22, $0, 0x44

addi $17, $0, 0xAB

sub $8, $19, $22

add $16, $21, $8

#Exercise 10: B = B - 0x1357

addi $17, $0, 0x2468

sub $17, $17, 0x1357

1. Complete Table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Exercise | Destination Variable | Destination Register | Decimal Result | 32-bit Hex Result |
| 1 | C | $18 | 170 | 0x000000AA |
| 2 | D | $19 | 22 | 0x00000016 |
| 3 | F | $21 | -90 | 0xFFFFFFA6 |
| 4 | F | $21 | 10 | 0x0000000A |
| 5 | G | $22 | 3848 | 0x00000F08 |
| 6 | H | $23 | 145 | 0x00000091 |
| 7 | A | $16 | -3 | 0xFFFFFFFD |
| 8 | D | $19 | 400 | 0x00000190 |
| 9 | A | $16 | 511 | 0x000001FF |
| 10 | B | $17 | 4369 | 0x00001111 |