Computer Architecture And Microprocessors

Assignment 2

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CSE (O2)

**Problem:** Write a SimpleRISC Assembly Program to find

Ramanujan Number, the smallest number that can be

expressed as a sum of two cubes in two different ways.

**Solution:**

mov r0,1 #variable i

.loop1:

mov r1,1 #variable j

mov r2,0 #counter

.loop2:

add r3,r2,1 #variable k

.loop3:

mul r4,r1,r1

mul r4,r4,r1

mul r5,r3,r3

mul r5,r5,r3

add r6,r4,r5

cmp r6,r0

add r3,r3,1

beq .counter

cmp 1,1

beq .loop4

.counter:

add r2,r2,1

.loop4:

mul r7,r3,r3

mul r7,r7,r3

cmp r7,r0

bgt .loop2

mul r8,r2,r2

mul r8,r8,r2

add r2,r2,1

cmp r8,r0

bgt .loop1

cmp r2,2

beq .endprogram

add r0,r0,1

.endprogram: mov r9,r0

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**Final Output** i.e. the Ramanujan Number is stored in the register r9.