

Computer Architecture And Microprocessors

Assignment 2

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Task- 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.

```
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

```

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