CSE 112 Lab 1

2.1

1.

1) 2^15 + 2^13 + 2^11 + 2^9 + 2^8 + 2^7 + 2^6 + 2^3 + 2^2 + 1 = 43,981

2) 2^15 + 2^14 + 2^13 + 2^12 + 2^11 + 2^10 + 2^9 + 2^7 +2^6 + 2^4 + 12 = 65,244

3) 2^14 + 2^13 + 2^12 + 2^11 + 2^10 + 2^8 + 2^7 + 2^6 + 2^5 + 2^4 + 8 = 32,248

4) 2^13 + 2^12 + 2^5 + 2^4 + 2^3 + 1 = 12,345

2.

1) 15 x (16^3) = 40,960

2) 8×16^3 + 10×16^2 + 8×16 + 9 = 35,465

3) 16^2 + 9×16 = 400

4) 10×16^3 + 15×16^2 + 12×16 + 13 = 45,005

3. First converting all the numbers in binary and then forming triplets from right hand side to convert in octal:

1) $(a000)_{16} = (1010\ 0000\ 0000\ 0000)_2 = (120000)_8$

2) $(8a89)_{16} = (1000\ 1010\ 1000\ 1001)_2 = (105211)_8$

3) $(0190)_{16} = (0000\ 0001\ 1001\ 0000)_2 = (0620)_8$

4) $(afcd)_{16} = (1010\ 1111\ 1100\ 1101)_2 = (127715)_8$

4.

1) $(1010\ 1011\ 1100\ 1101)_2 = (001\ 010\ 101\ 111\ 001\ 101)_2 = (125715)_8$

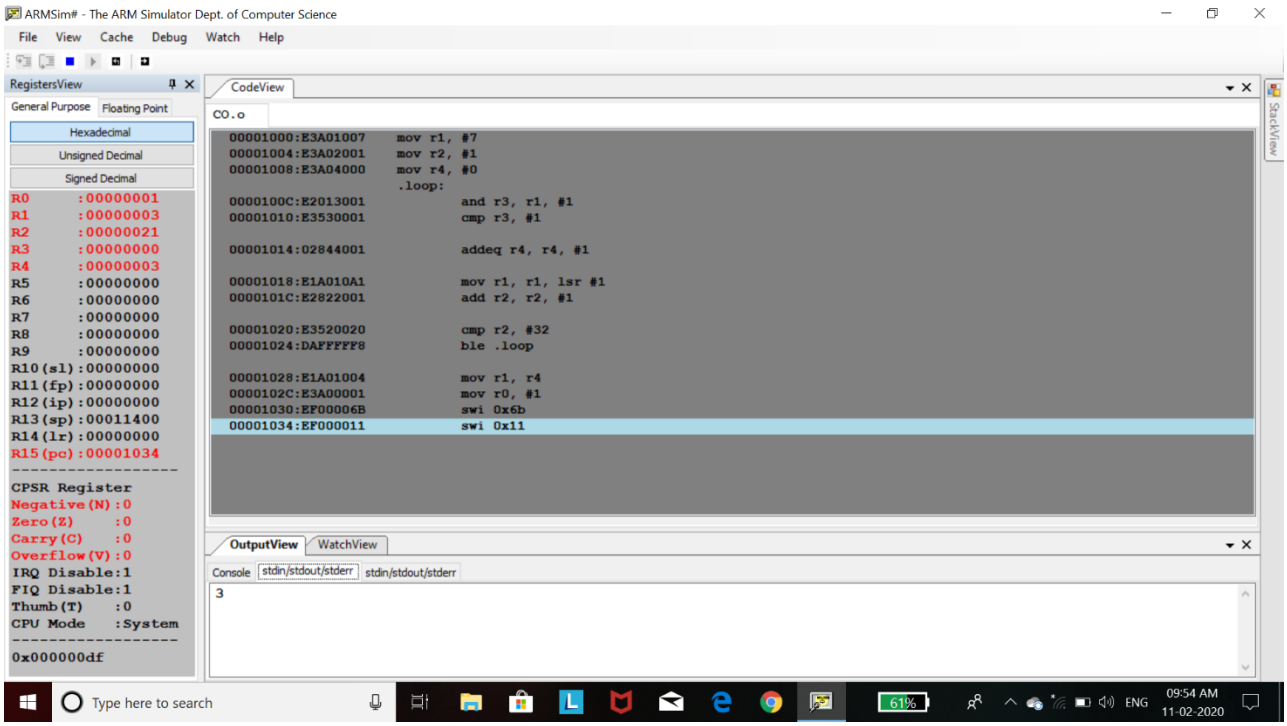
2) $(1111\ 1110\ 1101\ 1100)_2 = (001\ 111\ 111\ 011\ 011\ 100)_2 = (177334)_8$

3) $(0111\ 1101\ 1111\ 1000)_2 = (000\ 111\ 110\ 111\ 111\ 000)_2 = (076770)_8$

4) $(0011\ 0000\ 0011\ 1001)_2 = (000\ 011\ 000\ 000\ 111\ 001)_2 = (030071)_8$

2.2

2.

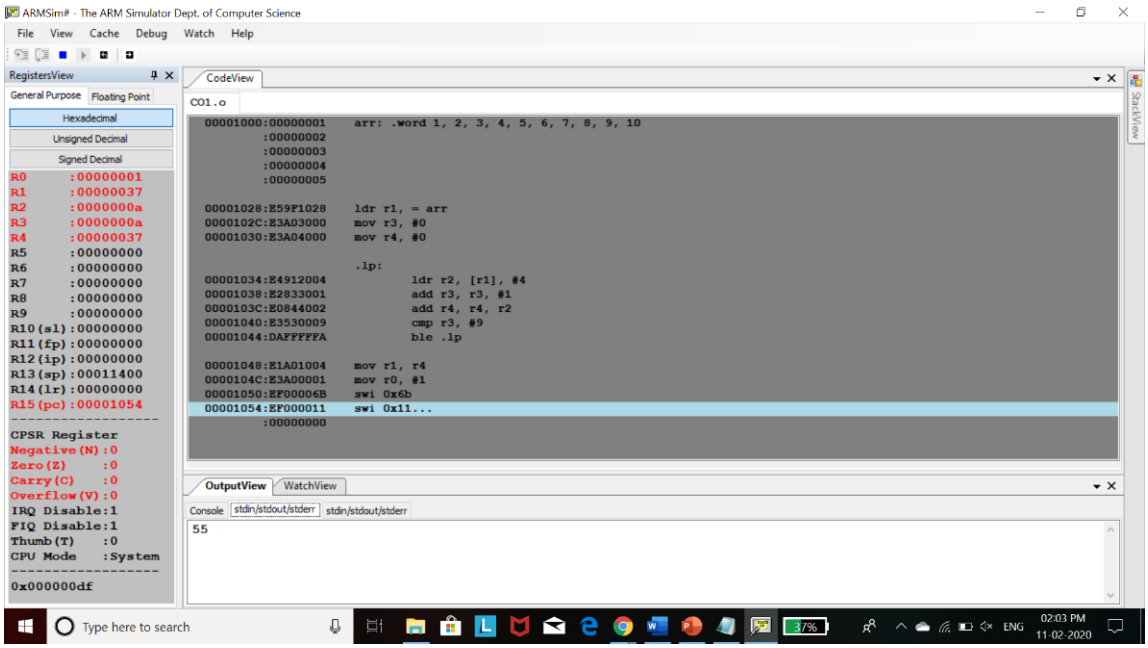


This works as follows:

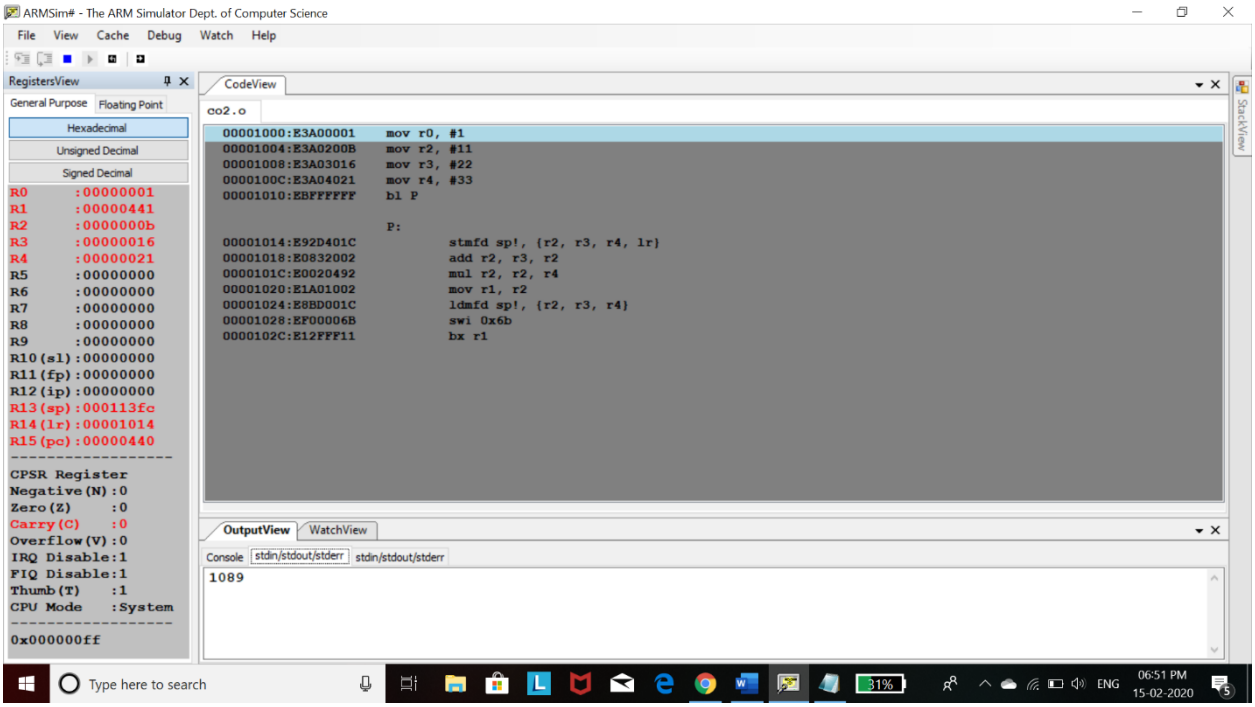
The value 7 is stored register r1, value 1 in r2 and value 0 in r4. Now, the loop executes: and operation is applied on 1 and the LSB of the binary number stored in r1, the answer gets stored in r3. The value in r3 is compared with 1 and if it is 1, 1 is added to the initial value stored in r4. Next, the bit in r2 gets shifted towards right so as to check if the next bit is 1. Since one operation is complete 1 is added to r2 which depicts the count of the bit being checked. r2 is compared with 32 to check if all the bits are compared or not. If it comes out to be less than or equal to 32 it branches to loop otherwise the programme proceeds to end by storing the value of r4 in r1 and 1 in r0 for stdout handle and print the value stored in r1 using swi0x6b. The last line ends the programme.

2.3

1. Sum the numbers of array a[ ]. Find a way to initialize this array with values you choose. Print sum.



2. The procedure should add the first two and multiply it with the third. Invoke the procedure P with arguments 11, 22 and 33. Print the result returned by P.



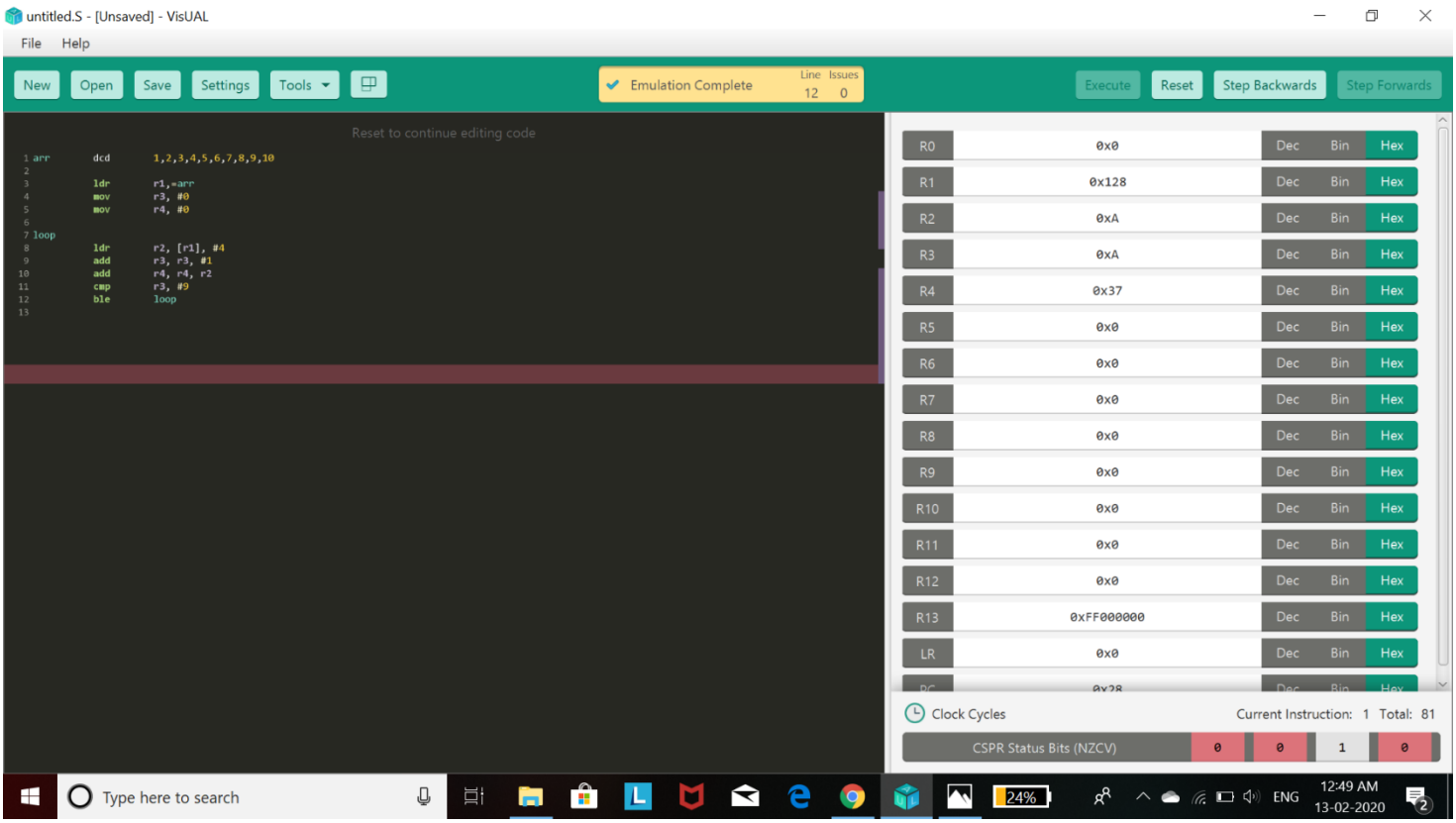
In visual

2.2)

1. The explanation is same as ARMsim.

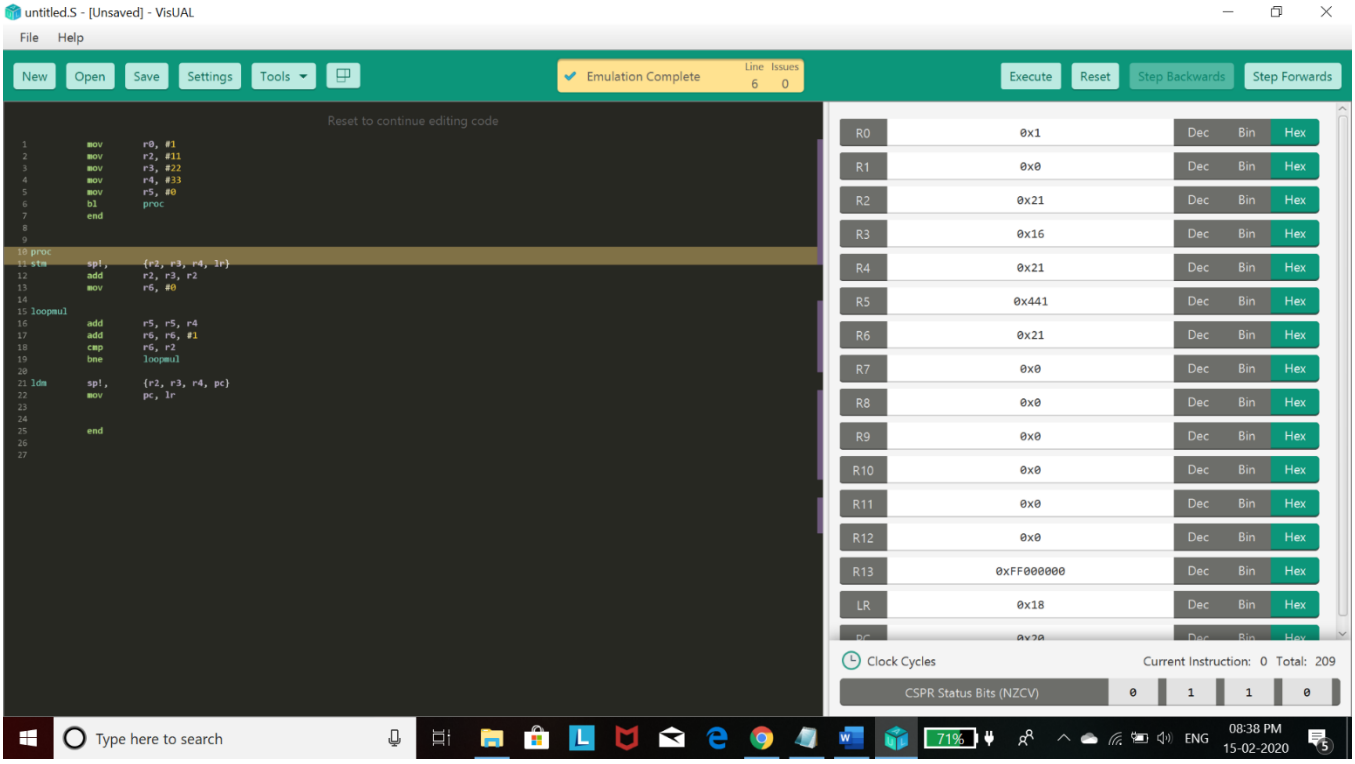
2.3)

1. Sum the numbers of array a[]. Find a way to initialize this array with values you choose. Print the sum.



The result is stored in r4. Please zoom in if the font size is small.

2. The procedure should add the first two and multiply it with the third. Invoke the procedure P with arguments 11, 22 and 33. Print the result returned by P.



The result is stored in r5. Please zoom if the font size is small.