Experiment 13

Aim:

To write an ARM Assembly Language to implement the equations

- $ax^2 + by^2$
- $6(x+y)+2z+4$

Tool Used: Keil uVision4

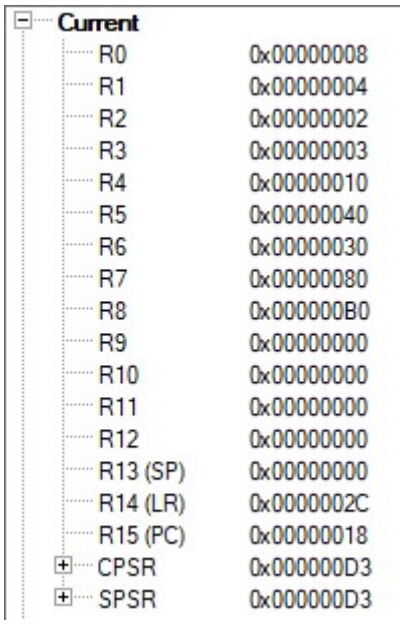
Equation 1 Code

```
 AREA PROGRAM, CODE, READONLY
 ENTRY
MAIN
        LDR R0, X
        LDR R1, Y
        LDR R2, A
        LDR R3, K
        MUL R4,R1,R1 ; y^2
        MUL R5,R0,R0 ; x^2
        MUL R6,R3,R4 ; k*y^2
        MUL R7,R5,R2 ; a*x^2
        ADDS R8,R7,R6 ; a*x^2 + k*y^2
        ADDCS R9,R9,#1
        SWI &11
 AREA PROGRAM, DATA, READONLY
X DCD &8
Y DCD &4
A DCD &2
K DCD &3
 END
```

Output:

```
Running with Code Size Limit: 32K
Load "C:\\Users\\User\\Documents\\Code-sync\\Keil\\ARM\\E

*** Restricted Version with 32768 Byte Code Size Limit
*** Currently used: 60 Bytes (0%)
```

The expected result B0 is displayed in R8.



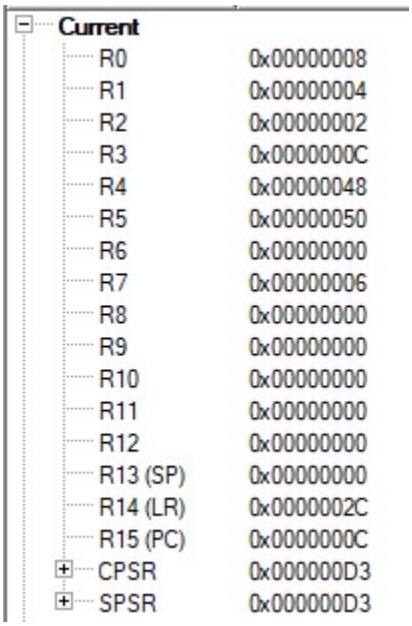
Equation 2 Code

```
 AREA PROGRAM, CODE, READONLY
 ENTRY
MAIN

        LDR R0, X
        LDR R1, Y
        LDR R2, Z
        MOV R7, #6;
        ADD R3,R0,R1 ; X+Y
        MUL R4,R3,R7 ; 6(X+Y)
        MOV R2,R2,LSL #1 ; 2Z
        ADDS R5,R2,R4 ; 6(X+Y) + 2Z
        ADDCS R5,R5,#5;
        ADDCC R5,R5,#4;
        SWI &11
 AREA PROGRAM, DATA, READONLY
X DCD &8
Y DCD &4
Z DCD &2
 END
```

Output:

```
Running with Code Size Limit: 32K
Load "C:\\Users\\User\\Documents\\Code-sync\\Keil\\ARM\\Experiement 13\\eqn.axf"

*** Restricted Version with 32768 Byte Code Size Limit
*** Currently used: 56 Bytes (0%)
```

The expected result 50 is displayed in R5.



Result:

The experiments to implement the equations is found valid and correct.