Exercício 2 – Guilherme Meyer

Parte 1

Programa 1

```
.text
.globl _start
_start:

li t0, 2 #a
li t1, 3 #b
li t2, 4 #c
li t3, 5 #d


add t4, t0, t1 #5
add t5, t2, t3 #9
sub t6, t4, t5 # -4
# X = t6 = (a + b) - (c + d)


sub t4, t0, t1 #-1
add t4, t4, t6 #-5
# Y = t4 = (a - b) + X[t6]

sub t1, t6, t4 #1
# B = x - y


nop
```

Programa 2

```
.text
```

```
.globl _start
_start:
  li t0, 1        #x
  li t1, 5

  sub t2, t1, t0    #t2 = 5 - x  = 4
  addi t3, t2, 15   #t3 = 4 + 15 = 19 = y

  nop
```

Programa 3

```
.text
.globl _start
_start:

  li t0, 3        # x
  li t1, 4        # y

  # 15 - x
  li t2, 15
  sub t3, t2, t0    # 15 - 3 = 12

  # 67 - y
  li t4, 67
  sub t5, t4, t1    #  67 - 4 = 63

  # 15 - x + 67 - y
  add t6, t3, t5    # 12 + 63 = 75

  # z = 75 + 4 = 79
  addi s0, t6, 4

  nop
```

Parte 2

Programa 4

```
.text
.globl _start
_start:

  li t0, 1         # x

  # 5 * x
  li t1, 5
  mul t2, t1, t0    # 5 * 1 = 5

  # y = 5*x + 15
  addi s0, t2, 15

  nop
```

Programa 5

```
.text
.globl _start
_start:

  li t0, 3         # 3
  li t1, 4         # 4

  # 15 * x
  li t2, 15
  mul t3, t2, t0    # 15 * 3 = 45

  # 67 * y
  li t4, 67
  mul t5, t4, t1    # 67 * 4 = 268

  # (15*x) + (67*y) = 45 + 268 = 313
  add t6, t3, t5

  # z = 313 * 4 = 1252
  li s1, 4
  mul s0, t6, s1

  nop
```

Programa 6

```
.text
.globl _start
```

```
_start:

  li t0, 1
  slli t1, t0, 20   # x = 1 deslocado em 20 bits para a esquerda = 1048576

  slli t2, t0, 12   # y = 1 deslocado em 12 bits para a esquerda = 4096

  # z = x + y
  add s0, t1, t2    # z = 1048576 + 4096 = 1052672

  nop
```

Programa 7

```
.text
.globl _start
_start:

  li t0, -1        # x = 0xFFFFFFFF


  li t1, 1
  slli t2, t1, 13   # y = 1 deslocado em 13 bits para a esquerda = 8192


  slli t3, t2, 2    # 4*y = 8192 deslocado em 2 bits para a esquerda = 32768

  # z = x - 4*y (0xFFFFFFFF - 32768)
  sub s0, t0, t3


  nop
```

Programa 8

```
.text
.globl _start
_start:


  ori x8, x0, 0x01     # x8 = 0x00000001



  slli x8, x8, 1
  ori  x8, x8, 0x01    # bits 0-1 = 1
  slli x8, x8, 2
  ori  x8, x8, 0x03    # bits 0-3 = 1
  slli x8, x8, 4
  ori  x8, x8, 0x0F    # bits 0-7 = 1
  slli x8, x8, 8
  ori  x8, x8, 0xFF    # bits 0-15 = 1
  slli x8, x8, 16
  ori  x8, x8, 0xFFFF   # todos os bits = 1



  nop
```

Programa 9

```
.text
.globl _start
_start:

   lui x8, 0x12345
   addi x8, x8, 0x678  # x8 = 0x12345678



   srli x9, x8, 24     # desloca 24 bits para direita: 0x00000012
   andi x9, x9, 0xFF

   # x10 = 0x34
   srli x10, x8, 16    # desloca 16 bits: 0x00001234
   andi x10, x10, 0xFF

   # x11 = 0x56
   srli x11, x8, 8     # desloca 8 bits: 0x00123456
   andi x11, x11, 0xFF


   andi x12, x8, 0xFF

   nop
```