Static array

Declaration and initialization in .data

```
T: .word  0,1,0,1 # Allocate 4 integers
```

Declaration in .data

```
T: .space 16 #Allocate 16 bytes
```

Access in .text

```
.text
li $t0, 0
sw $t1, T($t0) # store the first integer
addi $t0,$t0, 4
sw $t1, T($t0) # store the second
integer
```

Dynamic array

Declaration in .text

```
li $v0, 9
li $a0, 16 # $a0 must contain the number of bytes to be allocated
Syscall # $v0 contains the address of the first byte allocated
```

Static array

T($t0) : the address T added to the address in $t0

Dynamic array

T is replaced by the address 0

0($t0)≡($t0) : address in $t0

Access in .text

```
sw $t1, ($v0) # store the first integer
addi $v0,$v0, 4
sw $t1, ($v0) # store the second integer
```

Temporary registers

Register Name	Usage
$t0 - $t9	Temporary registers
$s0 - $s7	Temporary registers

Exercise

Write a program that asks user to fill an array A with N (>0) digits. We assume that the user will enter single-digit natural numbers only {0,1,2,3,4,5,6,7,8,9}. The program should then put in an array B of size 10 the number of occurrences of each digit in the array A. Print the array B.

Example:

N=6

A

7	2	9	2	1	0

B

0	1	2	3	4	5	6	7	8	9
1	1	2	0	0	0	0	1	0	1

Consider that:

- The address of the Array A is stored in $s0
- $t1 contains N
- A is filled
- B is filled with 0s