Week 3 homework

Students

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Source code

Google Drive

Exercise 1

Requirement: input two integers a, b. Determine wether a > b, a < b or a = b

Main idea

Pseudo code:

```
a, b <- input from keyboard
if a > b:
    print "a > b"
else if a < b:
    print "a < b"
else:
    print "a = b"
```

Testing and screenshots

```
10
5
a > b
-- program is finished running --
```

```
102
200
a < b
-- program is finished running --
```

```
50
50
a = b
-- program is finished running --
```

Exercise 2

Requirement: input a character and check whether it is uppercase or lowercase.

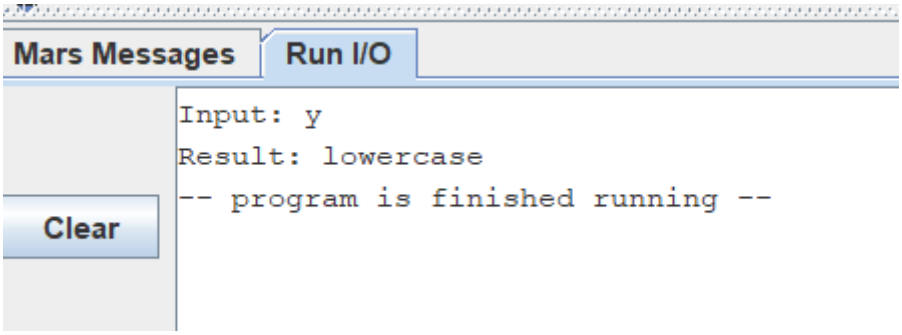
Main idea

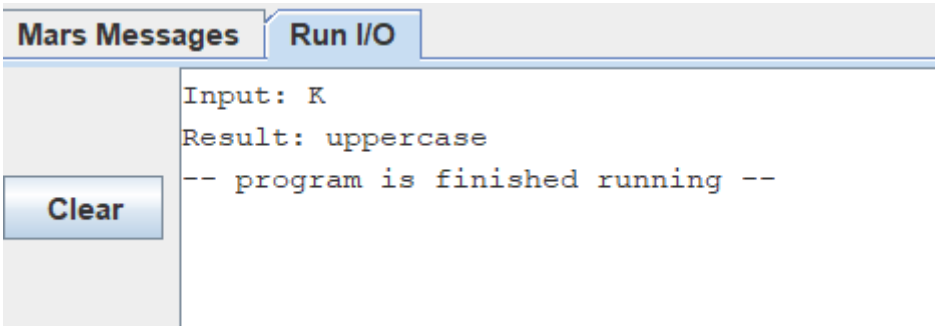
Pseudo code:

```
1. Read a character from the user
2. If the character's ASCII code is less than 65 (less than 'A'):
    -> Output "Invalid character" to the console and go to step 8
3. Else if the character's ASCII code is greater than 90 ('Z'):
    -> Go to step 5
```

```
4. Output "Result: uppercase" to the console and go to step 8
5. If the character's ASCII code is less than 97 ('a'):
    -> Output "Invalid character" to the console and go to step 8
6. Else if character's ASCII code is greater than 122 ('z'):
    -> Output "Invalid character" to the console and go to step 8
7. Output "Result: lowercase" to the console and go to step 8
8. Exit the program
```

Testing and screenshots





Exercise 3

Requirement: input an array and output it

Main idea

Pseudo code of the LOOP:

```
initialize i = 0, array_ptr = first address of the array
Loop:
+ Display message

+ Do our task (input, store the value in the address, load the value, output
```

```
the value, ...)

Increment 'i' by 1
Move 'array_ptr' to the next address of the array

If 'i' is equal to 'n', end the loop
Otherwise, jump to Loop
```

Testing and screenshots

```
Enter the number of elements (n): 4
a[0] = 4
a[1] = 6
a[2] = 999
a[3] = 213
4
6
999
213

-- program is finished running --
```

Exercise 4

Requirement: input a string and print the length of it, using an assembly program

Main idea

Pseudo code:

```
str <- "", length <- 0
let user input str

ptr <- address of first element of str
while value at ptr not \0 or \n:
    length <- length + 1
    ptr <- ptr + 1

print length
```

Testing and screenshots

```
10
5
a > b
-- program is finished running --
```

```
102
200
a < b
-- program is finished running --
```