

Homework #5 - Due 3/3/06 (Friday)

Write an MIPS assembly language program to perform bubble sort of "length" elements.

```
lastUnsorted = length - 1
sortedFlag = 0
while (lastUnsorted >= 1 and sortedFlag == 0) do
    sortedFlag = 1
    for test = 0 to lastUnsorted-1 do
        if (numbers[test] > numbers[test+1]) then
            temp = numbers[test]
            numbers[test] = numbers[test+1]
            numbers[test+1] = temp
            sortedFlag = 0
        end if
    end for

    lastUnsorted = lastUnsorted - 1
end while
```

Use the data below when you run your program.

```
.data
numbers: .word 20, 30, 10, 40, 50, 60, 30, 25, 10, 5
length: .word 10

.text
.globl main
main:
    ...

    li    $v0, 10          # system code for exit
    syscall
```

Detailed Directions: (This assume you are using PCSpim, but xspim is the labs under Linux too)

- 1) Write your assembly language program on paper first! I will not help anyone debug their program without your handwritten program.
- 2) Type in your program using Notepad. If Notepad is not in the Start menu, go to "Run" and type "notepad". Remember to use quotes around the file name "hw6s"
- 3) Debug your MIPS assembly language program.
- 4) When it is correct, **run it to completion** and copy to the Window's clipboard a snapshot of the PCSpim window by using the <Alt> and <Print Screen> keys together.
- 5) Open up new Word document and set its page layout to Landscape by File | Page Setup | Paper Size and then select Landscape.
- 6) Paste the snapshot of the PCSpim Debugger window into the Word document. Resize the snapshot to the margins and print a copy to turn in.
- 7) Print a copy of the assembly language program to turn in too.
- 8) Hand in a copy of your assembly language program **and** the snapshot of the PCSpim window showing the resulting sorted memory.