University of Stirling

Computing Science and Mathematics

CSCU9A2   Tutorial 6 – sample answers   Spring 2017

(for week starting 13 March)

1. There are no sample solutions. This should be an informal, anecdotal discussion of good design. The discussion should not only note that certain things are well or badly designed, but more importantly should try to identify explicitly **why** it is that we experience them as well or badly designed (for example: "does not follow a standard layout so hard to find things", or "has large buttons suitable for large/cold/arthritic fingers").

> **Note to tutors:**
>
> Students have had their first lecture on general principles of useability and accessibility (slides on the web site), but have not yet met any formal principles of good design, so you can't yet refer to these. (They will be covered in the next lecture.)

2. (Indices are 0 – 10)

Scan elements 0 – 10, -7 is already OK	−7	6	8	7	5	9	0	11	10	5	8
Scan elements 1 – 10, swap 0 & 6	−7	0	8	7	5	9	6	11	10	5	8
Scan elements 2 – 10, swap 5 & 8	−7	0	5	7	8	9	6	11	10	5	8
Scan elements 3 – 10, swap 5 & 7	−7	0	5	5	8	9	6	11	10	7	8
Scan elements 4 – 10, swap 6 & 8	−7	0	5	5	6	9	8	11	10	7	8
Scan elements 5 – 10, swap 7 & 9	−7	0	5	5	6	7	8	11	10	9	8
Scan elements 6 – 10, 8 is already OK	−7	0	5	5	6	7	8	11	10	9	8
Scan elements 7 – 10, swap 8 & 11	−7	0	5	5	6	7	8	8	10	9	11
Scan elements 8 – 10, swap 9 & 10	−7	0	5	5	6	7	8	8	9	10	11
Scan elements 9 – 10, 10 is OK	−7	0	5	5	6	7	8	8	9	10	11

Stop

3. Split   9 0 11 10 5 8 −7 6 8 7 5

    Sort, so Split   9 0 11 10 5   8 −7 6 8 7 5

    Sort, so Split   9 0   11 10 5   8 −7 6 8 7 5

    Sort   9   0   11 10 5   8 −7 6 8 7 5

    Sort   9   0   11 10 5   8 −7 6 8 7 5

    Merge   9   0   11 10 5   8 −7 6 8 7 5

                       0 9   11 10 5   8 −7 6 8 7 5

    Sort, so Split   0 9   11 10 5   8 −7 6 8 7 5

    Sort   0 9   11   10 5   8 −7 6 8 7 5

    Sort, so Split   0 9   11   10 5   8 −7 6 8 7 5

    Sort   0 9   11   10   5   8 −7 6 8 7 5

    Sort   0 9   11   10   5   8 −7 6 8 7 5

    Merge   0 9   11   10   5   8 −7 6 8 7 5

                       0 9   11   5 10   8 −7 6 8 7 5

    Merge   0 9   11   5 10   8 −7 6 8 7 5

                       0 9   5 10 11   8 −7 6 8 7 5

    Merge   0 9   5 10 11   8 −7 6 8 7 5

                       0 5 9 10 11   8 −7 6 8 7 5

    Sort   0 5 9 10 11   8 −7 6 8 7 5

    ...   ...

    Merge   0 5 9 10 11   −7 5 6 7 8 8

                       −7 0 5 5 6 7 8 8 9 10 11

    Stop