

In class physical demos of loops, branch nested in loop, loop nested in a loop

A resource to help students who are having trouble with:

- Recognizing when nesting occurs in real life situations.
- Applying nesting.
- Tracing nested algorithms.

First Example: Shoveling Snow

Algorithm: Simple Loop, repeat an action

- Shoveling the snow for a single residence (single loop)

While (sidewalk is not sufficiently shoveled)

 Shovel some snow

Optional link to a physical demonstration of the algorithm:

<https://www.youtube.com/watch?v=-qDUilzBuZk>

Algorithm: A choice each time the repetition occurs

- Shoveling the snow for a single residence (single loop)

While (sidewalk is not sufficiently shoveled)

 Shovel some snow

 if (very sweaty) then

 wipe brow

 endif

Optional link to a physical demonstration of the algorithm:

<https://www.youtube.com/watch?v=FtGFszTjBJY>

Algorithm: Each time an action is repeated, repeat another sequence of steps from start to end.

- Shoveling the snow for a multiple residences (nested loop)

```
While (there are some residences to be shoveled)
  While (sidewalk is not sufficiently shoveled)
    Shovel some snow
    if (very sweaty) then
      wipe brow
    endif
```

Optional link to a physical demonstration of the algorithm:
<https://www.youtube.com/watch?v=AwIWpSVv864>

Second Example: Martial Arts

Algorithm: Simple Loop, repeat an action

The "Tam kwOn do" short form - Version 1 One sequence of steps repeated four times (single loop)

While have not turned to each compass direction Rem: N, E, S, W

Salute/pay respects in the direction Rem: low and high block

Rem = remark or the pseudo code method of specifying documentation

Optional link to a physical demonstration of the algorithm:
<https://www.youtube.com/watch?v=H15zRkRXCec>

Algorithm: Two Sequential (non-nested) loops

The "Tam kwOn do" medium form - Version 2 Two successive repeated actions

While have not turned to each compass direction Rem: N, E, S, W

Salute/pay respects in the direction Rem: low and high block

While number of punches thrown in that direction is less than three

Throw a punch

Optional link to a physical demonstration of the algorithm:
<https://www.youtube.com/watch?v=J3u0m-9v9wQ>

Algorithm: Loop Nested in a loop

The "Tam kwOn do" Long form - Version 3 For each time a repeated action runs again repeat another sequence from start to end

While have not turned to each compass direction Rem: N, E, S, W

Salute/pay respects in the direction Rem: low and high block

While number of punches thrown in that direction is less than three

Throw a punch

Optional link to a physical demonstration of the algorithm:

<https://www.youtube.com/watch?v=uLep28QZ9bA>

Third Example: Tam's Dungeon of Doom

The Pseudo Code Algorithm: Dungeon Of Doom

- It's now been incorporated into the assignment description.