For this assignment we will keep building on the [same code base](https://github.com/mhofmann-uw/599-Knitting-Assignments)

[(Links to an external site.)](https://github.com/mhofmann-uw/599-Knitting-Assignments)

. Merge in the new code there and compare your past homeworks to the updated answer packages.

Now that we have knitgraphs and a transfer planner to produce knitout, we want to build a knitspeak compiler to make it easier to specify new knitgraphs. For this assignment you will implement the compiler from knitspeak to knitgraphs. You can then use your transfer planner to knit those knitgraphs with knitout. Much of the compiler has been done for you, but you'll need to process stitches into the knitgraph.

To do this you'll need to:

1. Look at the Stitch\_Definition class to learn about how the compiler will know how to build differen types of stitches (e.g., k, p, yo, slip, decreases, cables)
2. Implement a symbol table of all of the different types of Stitch and Cable Definitions in the knitspeak language
3. Implement the process\_stitch(...) function in the knitspeak\_compiler that uses adds the stitch\_definition and the knitgraph being built

The whole compiler is built with 2 parts: a parser and the compiler. The parser converts tokens in the knitspeak language into an abstract syntrax tree which defines what stitches are made on each course of the knitgraph. The compiler then processes those instructions to build a knitgraph to a specified width and height. Note that we are assuming the passed widths and heights are valid repetitions of the pattern (lazy-repeats).

## Implementation (85pts):

Symbol\_Table (60pts total):

* knit(5) ( pts)
* purl(5) ( pts)
* yo(5) ( pts)
* slip(5) ( pts)
* decreases(20) ( pts)
* cables(20) ( pts)

KnitSpeak\_Compiler.process\_stitch(...) (25 pts)

## What to Submit:

Your code in a .zip folder. The structure of the code should not change significantly from the existing code base. No class, method, or function names should be changed or test code may not work. Include a ReadMe with any changes to the code structure or special instructions. In addition to test completion you will be given 5pts for your code style and documentation. All methods should be fully document and your code should be free of errors and warnings. Any new python packages you use should be noted in the requirements.txt file.

5 Images resulting from running the main method in test\_knitspeak\_compiler.py. (Please submit screen captures of the resulting visualizations, not the html files) ( 2pts Each). These should show that your knit graphs generate correctly. Samples of correct knitout files are available in \\sample\_results\\p3\_visualizations.

## Updates to Code Base:

* The visualization tool has had some bug fixes and added features. Yarn edges are now red. Regular stitch edges are blue. Front cable edges are green, Back cable edges are green. So now you can tell which way a cable is crossing

**Points**

100

**Submitting**

a text entry box or a file upload

| **Due** | **For** | **Available from** | **Until** |
| --- | --- | --- | --- |
| Nov 12, 2021 at 5pm  Nov 12, 2021 at 5pm | Everyone | Nov 1, 2021 at 9am  Nov 1, 2021 at 9am | Dec 17, 2021 at 11:59pm  Dec 17, 2021 at 11:59pm |

## Rubric

**KnitSpeak to Knitout**

You've already rated students with this rubric. Any major changes could affect their assessment results.

| **Criteria** | **Ratings** | **Pts** |  |
| --- | --- | --- | --- |
| This criterion is linked to a Learning Outcome  knit() | | **5 pts**  **Full Marks** | **0 pts**  **No Marks** | | --- | --- | | 5 pts |  |
| This criterion is linked to a Learning Outcome  purl() | | **5 pts**  **Full Marks** | **0 pts**  **No Marks** | | --- | --- | | 5 pts |  |
| This criterion is linked to a Learning Outcome  yo() | | **5 pts**  **Full Marks** | **0 pts**  **No Marks** | | --- | --- | | 5 pts |  |
| This criterion is linked to a Learning Outcome  slip() | | **5 pts**  **Full Marks** | **0 pts**  **No Marks** | | --- | --- | | 5 pts |  |
| This criterion is linked to a Learning Outcome  decreases()  Should include:  k2tog, p2tog, k3tog, p3tog  skpo, s2kpo, sppo, s2ppo,  sk2po, sp2po | | **20 pts**  **Full Marks** | **10 pts**  **Only Knit Decreases Implemented** | **0 pts**  **No Marks** | | --- | --- | --- | | 20 pts |  |
| This criterion is linked to a Learning Outcome  cables()  Should have all combinations of all cable parameters  left #, right #, left-purl, right-purl | | **20 pts**  **Full Marks** | **0 pts**  **No Marks** | | --- | --- | | 20 pts |  |
| This criterion is linked to a Learning Outcome  process\_stitch() | | **25 pts**  **Full Marks** | **0 pts**  **No Marks** | | --- | --- | | 25 pts |  |
| This criterion is linked to a Learning Outcome  knitting visualizations | | **10 pts**  **Full Marks** | **8 pts**  **4/5 images** | **6 pts**  **3/5 pictures** | **4 pts**  **2/5 images** | **2 pts**  **1/5 images** | **0 pts**  **No Marks** | | --- | --- | --- | --- | --- | --- | | 10 pts |  |
| This criterion is linked to a Learning Outcome  Documentation and Style | | **5 pts**  **Full Marks** | **0 pts**  **No Marks** | | --- | --- | | 5 pts |  |
| Total Points: 100 | | | |