Work on these exercises before the tutorial. You don’t have to come up with complete solutions before the tutorial, but you should be prepared to discuss them with your TA.

IMPORTANT: Where applicable, you must use the proof structures and format of this course.

For this exercise, we will be using the following algorithm:

```python
def meaning_of_life(A):
    """ A function that takes a list A and outputs t """
    # Precondition: _________________________________
    1. n = len(A)
    2. t = 0
    3. if A[0] % 2 == 1:
        4. i = 0
        5. while i < n**2:
            6. t += A[i % n]
            7. i += 1
    8. else:
        9. i = n-1
        10. while i >= 0:
            11. t += A[i]
            12. i -= 1
    13. return t
```

1. Is there a precondition for `meaning_of_life`? Think about how a precondition for an algorithm relates to \( B' \in \mathbb{N} \) for run-time proofs, and whether one is necessary in this case.


3. What is the formula for the running time of `meaning_of_life`? What is the formula for the worst-case running time of `meaning_of_life`?
   If you’re unsure of what the difference is, recall Q3 from Tutorial 6.

4. Prove or disprove: `meaning_of_life` \( \in \Omega(n^3) \).