INSTRUCTIONS

• You have 10 minutes to complete this quiz.
• The exam is closed book, closed notes, closed computer, closed calculator.
• Mark your answers on the exam itself. We will not grade answers written on scratch paper.
• For multiple choice questions, fill in each option or choice completely.
  – □ means mark all options that apply
  – ○ means mark a single choice

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All the work on this exam is my own. (please sign)

0. Your thoughts? How has your week been?
1. **Temporal Locality**

Fill in the environment diagram that results from executing the code below until the entire program is finished, an error occurs, or all frames are filled. *You may not need to use all of the spaces or frames.*

A complete answer will:

- Add all missing names and parent annotations to frames.
- Add all missing values created or referenced during execution.
- Show the return value for each local frame.
- Use box-and-pointer notation for lists. You don’t need to write index numbers or the word “list”.

```python
def cache(f):
    hits = 0
    cache = [hits]
    def run(x):
        nonlocal hits, cache
        def hits(hits):
            if hits:
                cache = []
            else:
                cache = [not hits]
            return cache
        y = f(x)
        hits(hits).append([x, y])
        return x or y
    return run

cache(lambda x: cache)(1)
```