Monkey Republic: Give Your Monkey a Memory

Plan 35-45 minutes: predict on paper, then check on one projected computer. The local-model lesson needs a computer to run its download. Split advanced calculations across two sessions.

Learning goal

Specify the first action, remembered history and next action; trace five rounds and distinguish per-opponent memory from the last action globally.

Before starting

Complete the monkey payoff lesson and read if/otherwise instructions. No perceptron or Python prerequisite.

Materials

Two worksheet pages, one S and one G card per player, and history strips. Optional candy or paper bananas: start five per player and 30 in the bank for a five-round match, with scores at zero. Starting stock is not score. The teacher projects the replay.

Class sequence (5 / 10 / 10 / 10 min, plus 5-10 min discussion)

1. Predict (5 min): use always S, always G and Copycat: S first, then the opponent’s previous executed action. Both choose from the old history simultaneously.

2. Play (10 min): run Copycat against always S and always G for five rounds each. Record actions and scores. Reset history between matches; one score does not prove universal superiority.

3. Observe (10 min): play two Copycats and flip only the right action in round two. Record intended versus executed actions; later choices read executed history.

4. Challenge (10 min): meet friendly A, grabbing B, then A again. Compare global-last-action with per-opponent memory and explain which information each rule reads.

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Worked example

Under Win-Win, Copycat versus always G starts S/G at −1/5, then four G/G rounds at 0/0, totaling −1/5. Against always S it gets five S/S rounds, totaling 15/15.

Check understanding: ask before showing an answer

After only the right Copycat is flipped in round two, what does each do in round three? Does B's grab change A's personal history?

Expected answers and worksheet check

Round three is G/S, followed by S/G then G/S. The full SS,SG,GS,SG,GS trace totals 11 each; no flip gives 15 each. For A→B→A, global memory produces S,S,G; per-opponent memory S,S,S. B does not overwrite A. Their totals are seven and five: correct memory scope need not maximize score. The original trust game gives 4/9 against G, versus −1/5 here, because the payoffs differ.

Keep the claim within its limits

These are explicit Duel rules, not neural networks or automatically learned strategies. Society's similarly named characters use a dial engine; this exact trace does not transfer. A random mistake rate is not a scheduled single flip.

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Teacher setup

Start Copycat against always G for five rounds. Children predict first, then check next intentions and step. Changing rules or flip settings resets the match.

For the error task select two Copycats and one right-side flip in round two. Distinguish intended and executed columns. Use the opponent-switch exercise for A/B/A.

Check whether the rule is executable

Require the first round, whose history is read and a fallback when history is empty. Replay if a player sees the current opponent choice before deciding.

Support and extension

Support: trace just three rounds without totals. Extend: add a repair rule and test a held-out opponent. Keep a failing example rather than promising forgiveness is always optimal.

At home

Ask a parent to execute a strategy card for five rounds while you record. Schedule one flip in advance, predict and replay.

Continue learning

Monkey Republic: Will the Champion Win in Another World? / Element Duel: Can a Balanced Pattern Still Be Predicted? / Say It Clearly: Instructions for a Robot

Teacher reference (links also on the lesson page)

Lucas Academy: Monkey Republic: https://lucasacademy.org/monkey