

Non-Player Character Actions

Which AI technique is most often used to drive the actions of non-player characters in video games?

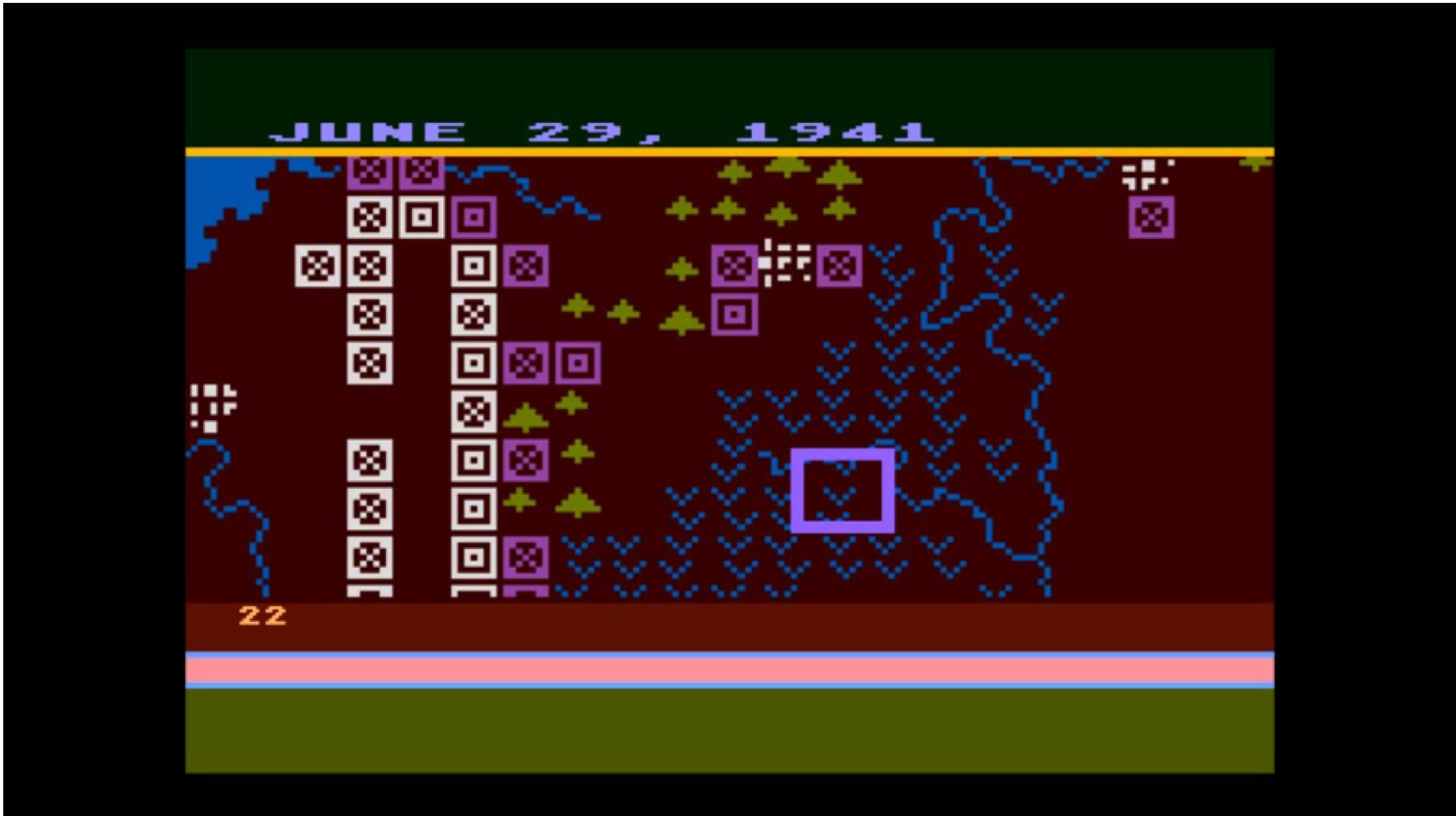
- ☐ (a) Neural Nets
- ☐ (b) Decision Trees
- ☐ (c) Sense Simluation
- ☐ (d) A*

Save & Grade

Save only

New variant

Breaking the AI



In the 1981 Atari 8-bit video game *Eastern Front 1941* which of the following playing strategies would break the opponent AI and essentially assure you of victory?

- ☐ (a) Do not attack cities, but instead simply advance your units as far as possible each turn.
- ☐ (b) Break your units into two blocks, and then advance them on alternate turns.
- ☐ (c) Build a continuous front line of units.
- ☐ (d) Move only 1 unit per turn, preventing the AI from having enough time generate an effective list of moves since it had no dedicated time to do so in this single-threaded game.

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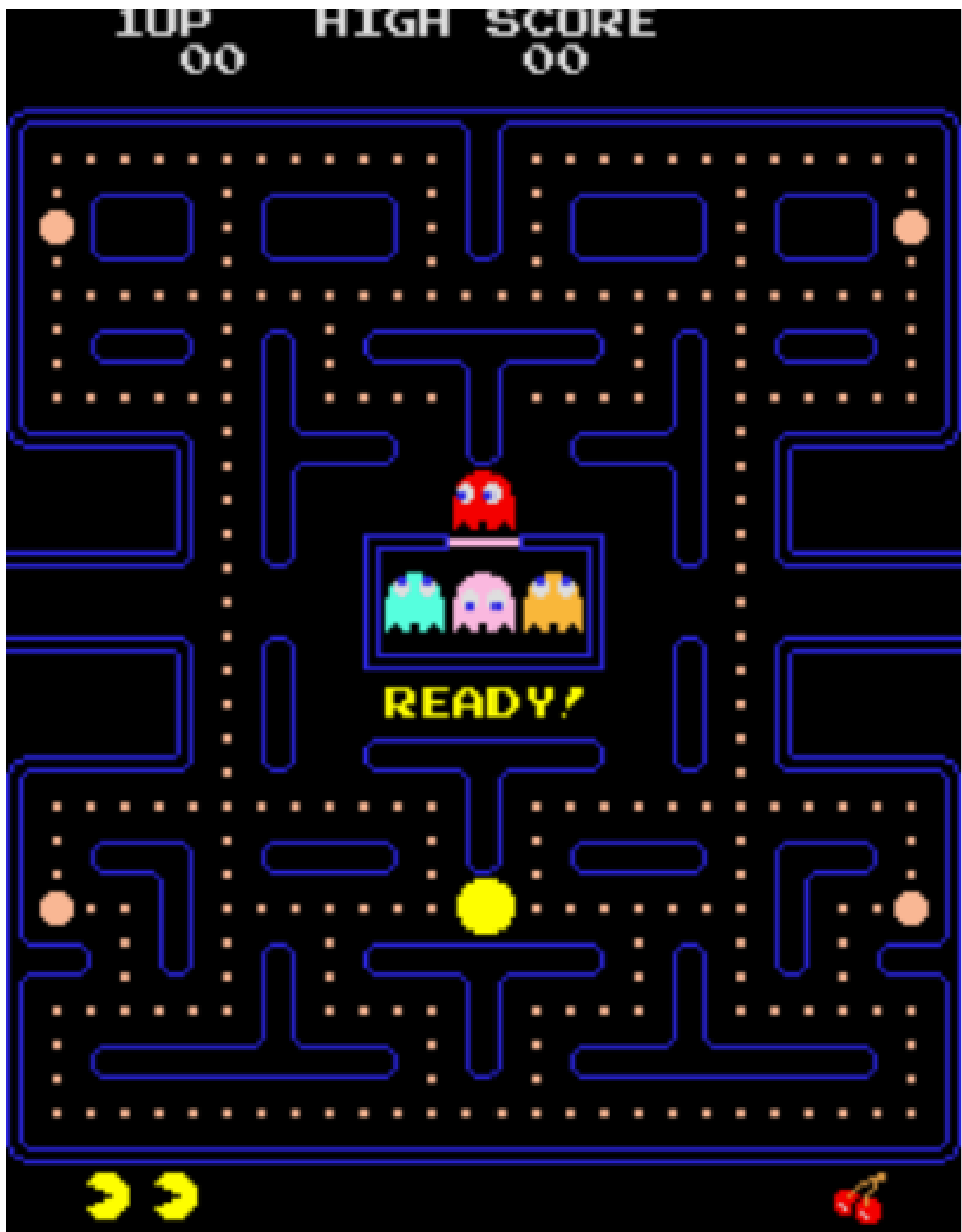
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New variant

Week 8: Oct 12

Game AI

[History Video PDF](#)
[Pathfinding Video PDF](#)
[A* Video PDF](#)



Pac-Man pioneered the use of a state machine for opponent AI behavior. Which of the following are states for the ghosts in Pac-Man?

- ☐ (a) Wander
- ☐ (b) Frightened
- ☐ (c) Scatter
- ☐ (d) Gather
- ☐ (e) Chase

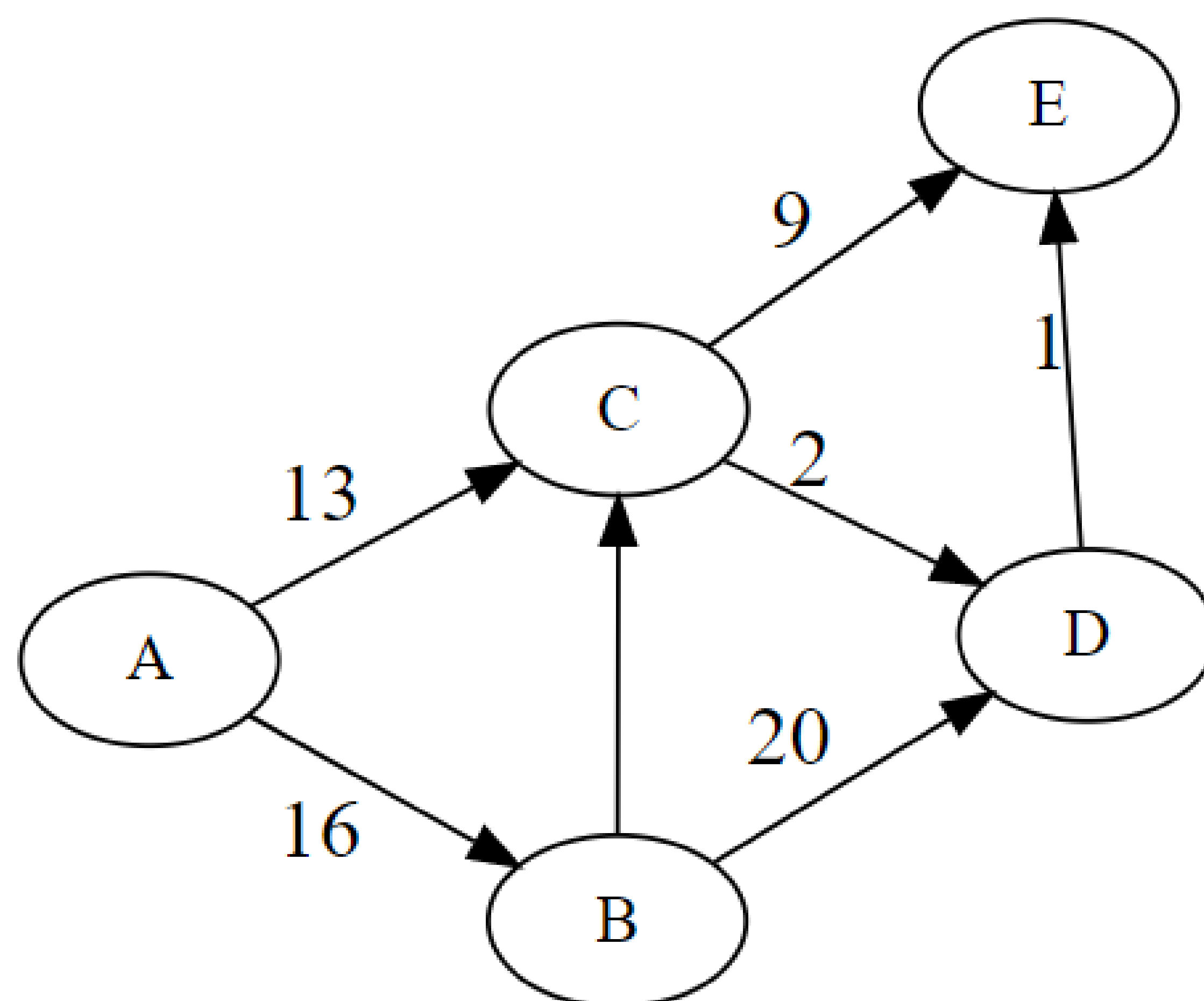
Select all possible options that apply. ?

Week 8: Oct 12	Game AI	History Video PDF Pathfinding Video PDF A* Video PDF
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Shortest Path

For the graph below, state the largest integer weight for directed edge (B, C) that makes the given description true. (Note that the edge weight need not be positive!)

The unique shortest path from A to E is A B C D E.



weight(B,C)= integer

?

Save & Grade

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New variant

Current shortest path is

$A \rightarrow C \rightarrow D \rightarrow E$

$$13 + 2 + 1 = 16$$

$A \rightarrow B \rightarrow C \rightarrow D \rightarrow E$

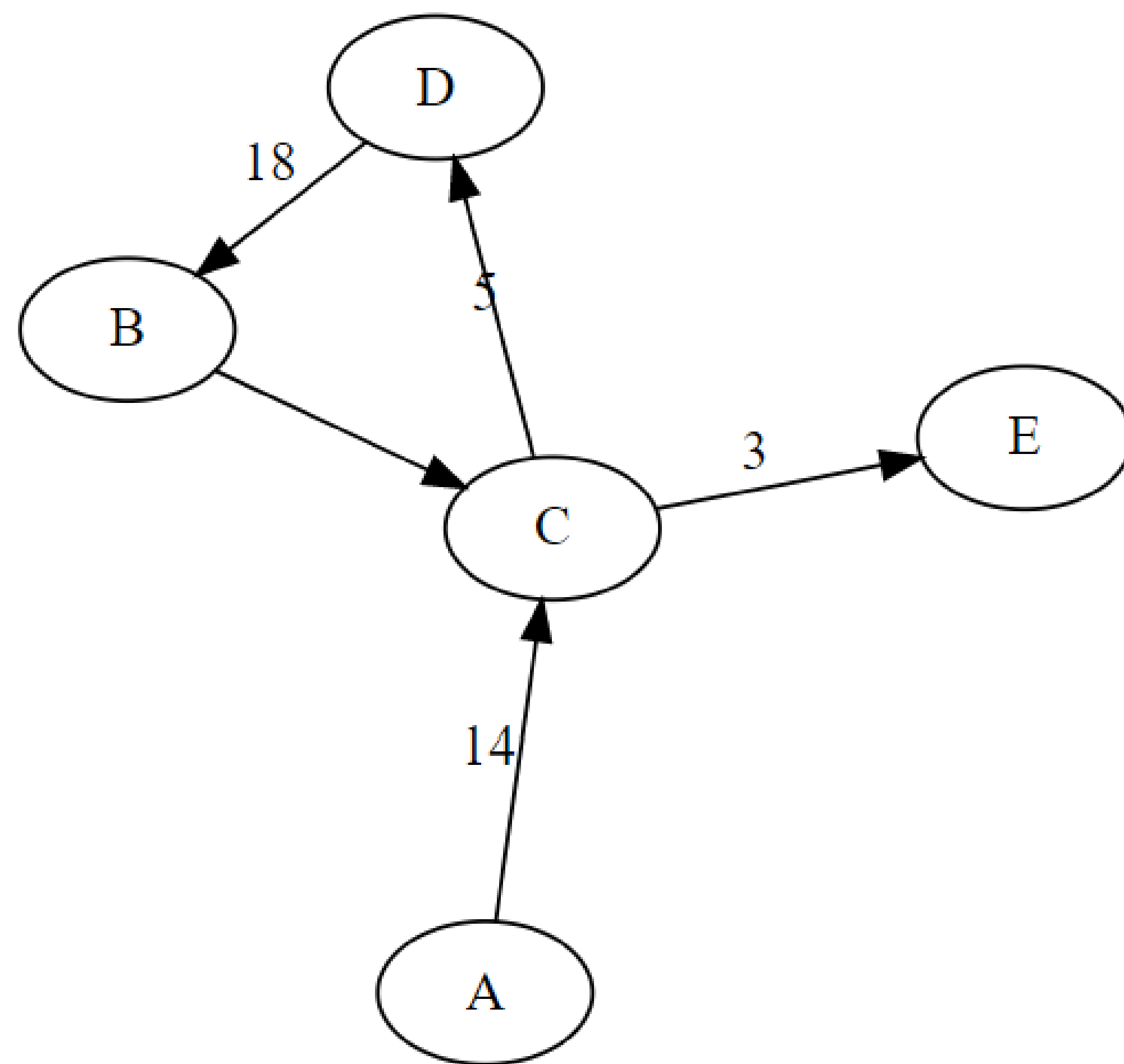
$$16 + x + 2 + 1 = 19 + x$$

$$19 + x < 16 \text{ for } \boxed{x = -4}$$

Shortest path

For the graph below, state the largest integer weight for directed edge (B, C) that makes the given description true. (Note that the edge weight need not be positive!)

A shortest path from A to E does not exist.



weight(B,C)= integer

?

Save & Grade

Save only

New variant

Can create a negative weight cycle on CBD

Can always reduce path weight $A \rightarrow E$ by going around cycle more

$$18 + 5 - 24 \rightarrow -1$$

