Optimisation scenarios

Quiz, 6 questions

6/6 points (100%)

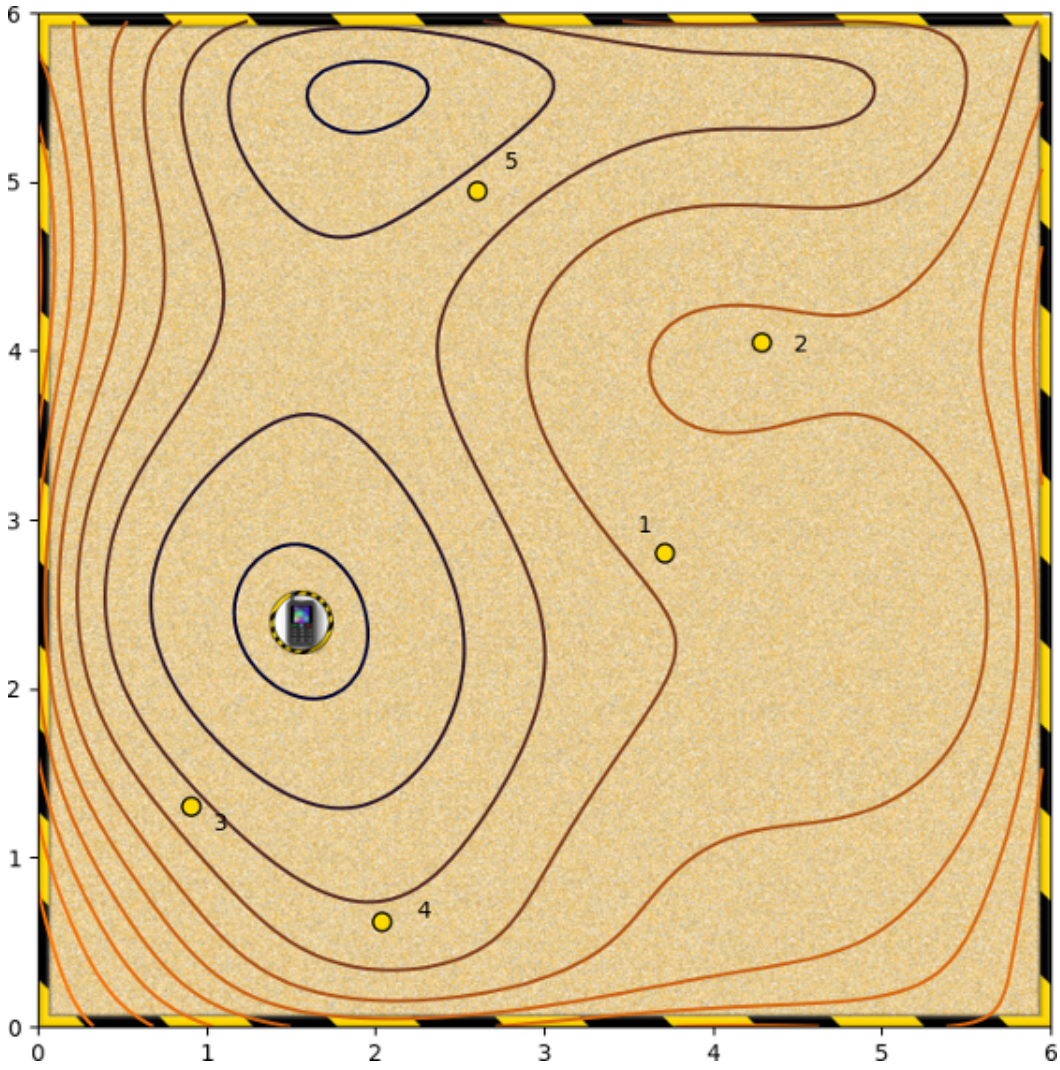
Congratulations! You passed!

Next Item

1 / 1 point

1.

Given the following contour plot,



Which starting points (from 1 to 5) are likely to converge to the global minimum (shown by the mobile phone) when using a steepest descent algorithm?

- [x] Starting point 1

Correct

In this case, the algorithm descends smoothly down the slope.

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Starting point 2

Un-selected is correct

Starting point 3

Correct
In this case, the algorithm descends smoothly down the slope.

Starting point 4

Correct
In this case, the algorithm descends smoothly down the slope.

Starting point 5

Un-selected is correct

None of the above

Un-selected is correct

---

1 / 1 point

2.

Again, which starting points converge to the global minimum?

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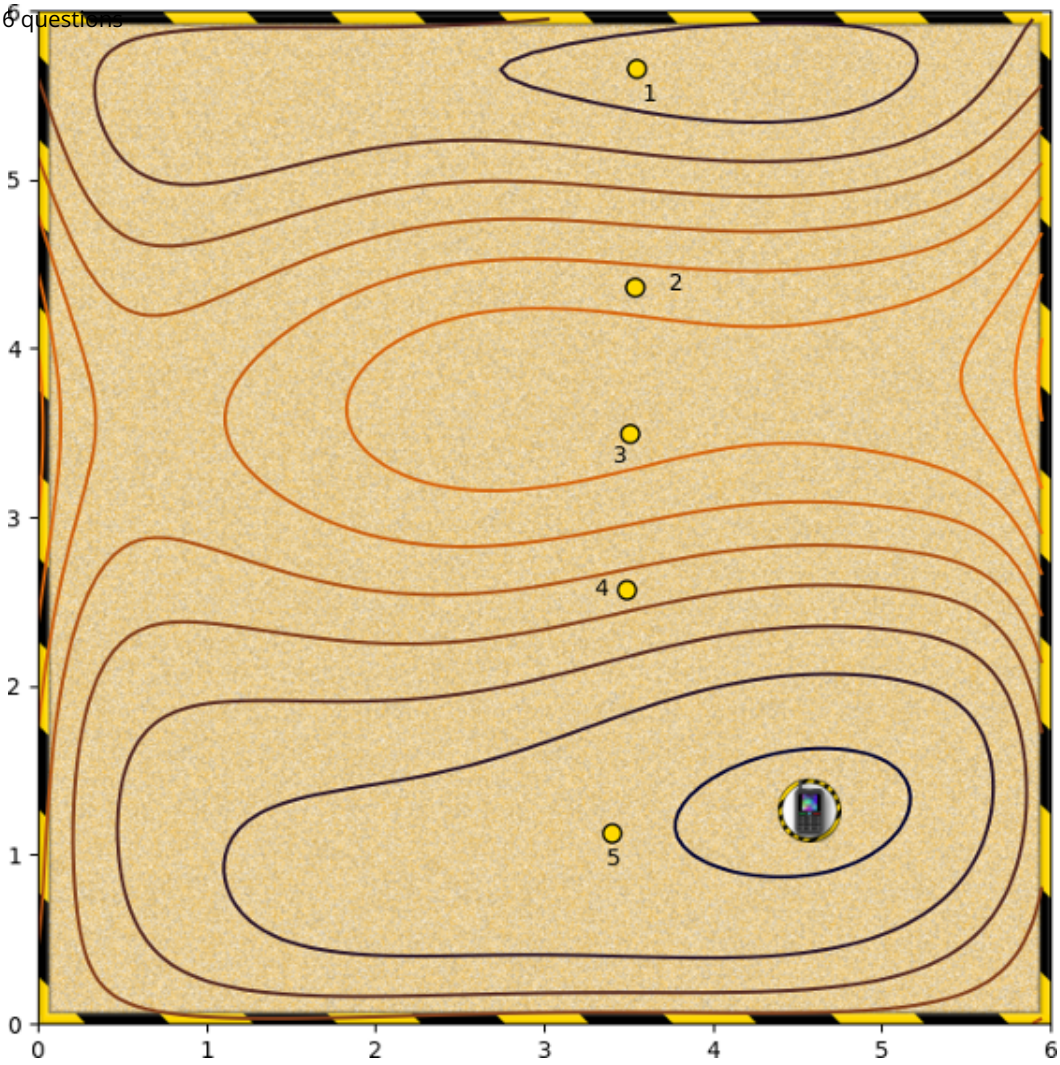

- [x] Starting point 1

Un-selected is correct

- [x] Starting point 2

Un-selected is correct

- [x] Starting point 3

Correct

This should converge to the global minimum.

- [x] Starting point 4

Correct

This should converge to the global minimum.

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- [x] Starting point 5

Correct

This should converge to the global minimum.

- [x] None of the above

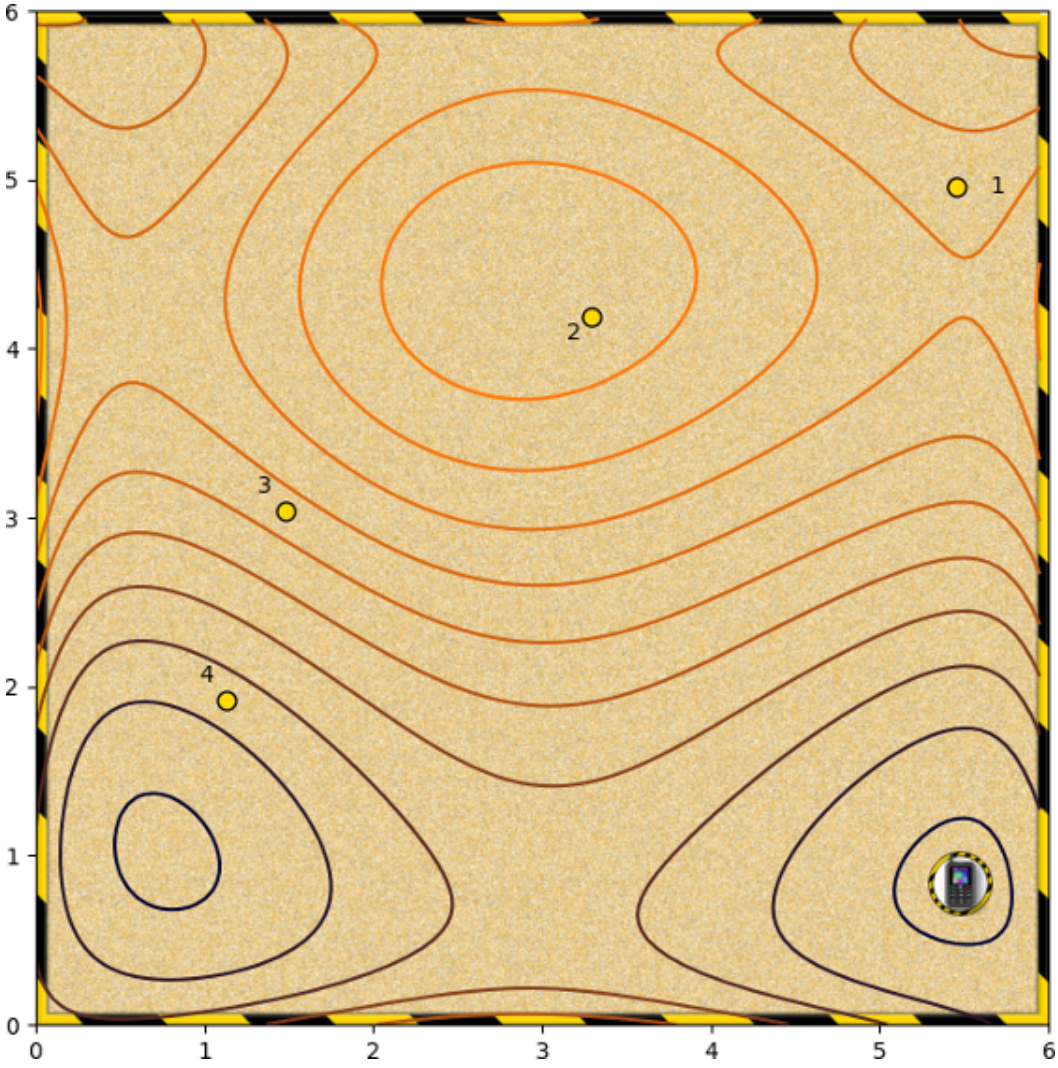
Un-selected is correct

---

1 / 1 point

3.

Which starting points converge to the global minimum?



Starting point 1

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Un-selected is correct

Starting point 2

Correct

From here, the algorithm will descend the hill to the global minimum.

Starting point 3

Un-selected is correct

Starting point 4

Un-selected is correct

None of the above

Un-selected is correct

---

1 / 1 point

4.

What's happening in this gradient descent?

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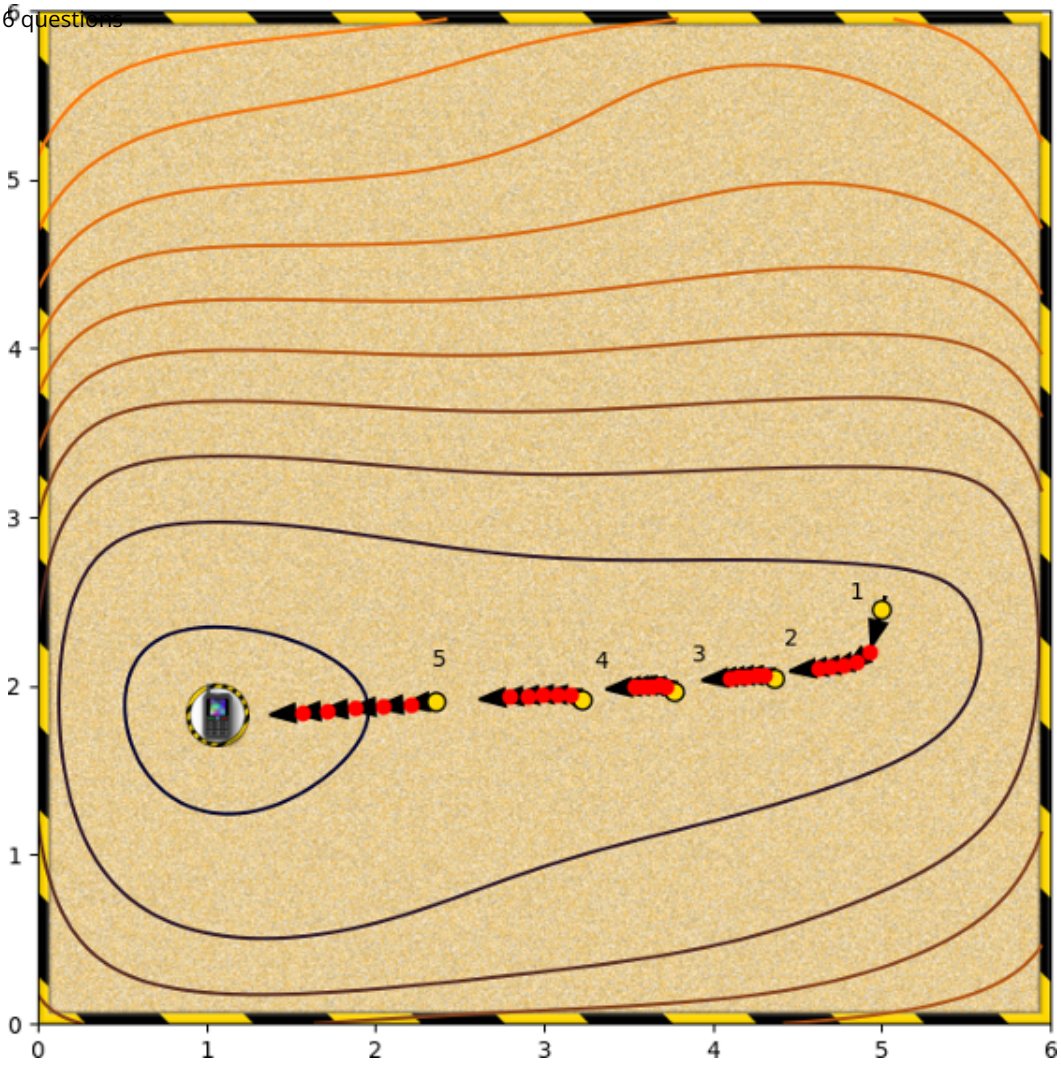

- None of the other options.
- The global minimum is in a wide and flat basin, so convergence is slow.

Correct

This could be improved by increasing the aggression.

- The algorithm is getting stuck near saddle points.
- The algorithm is getting stuck near local minima.

1 / 1 point

5.

What is happening here?

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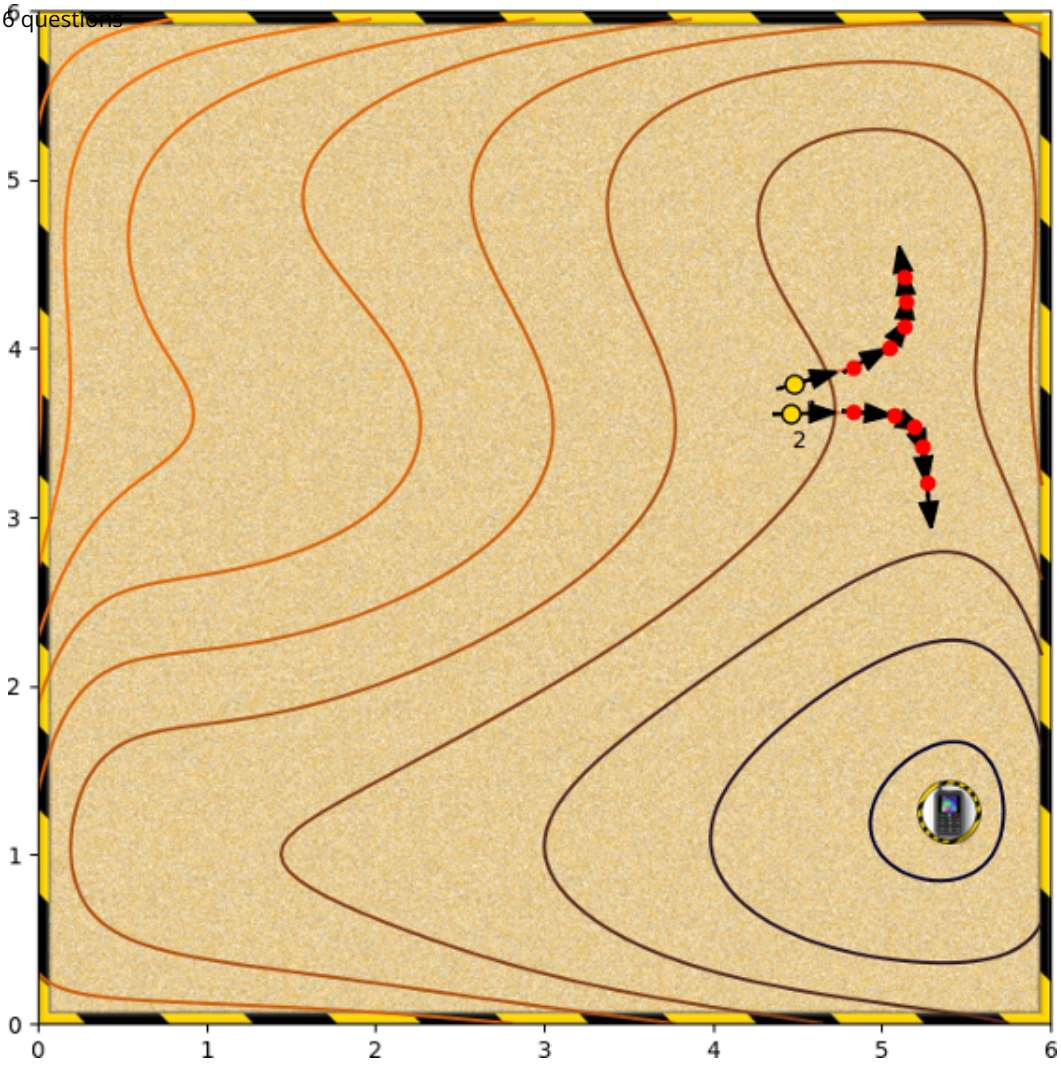

- None of the other options.
- The algorithm is passing either side of a local maximum.
- There is noise in the system.
- The algorithm is passing either side of a saddle point.

Correct

- The algorithm is passing either side of a local minimum.

1 / 1 point

6.

What is happening here?

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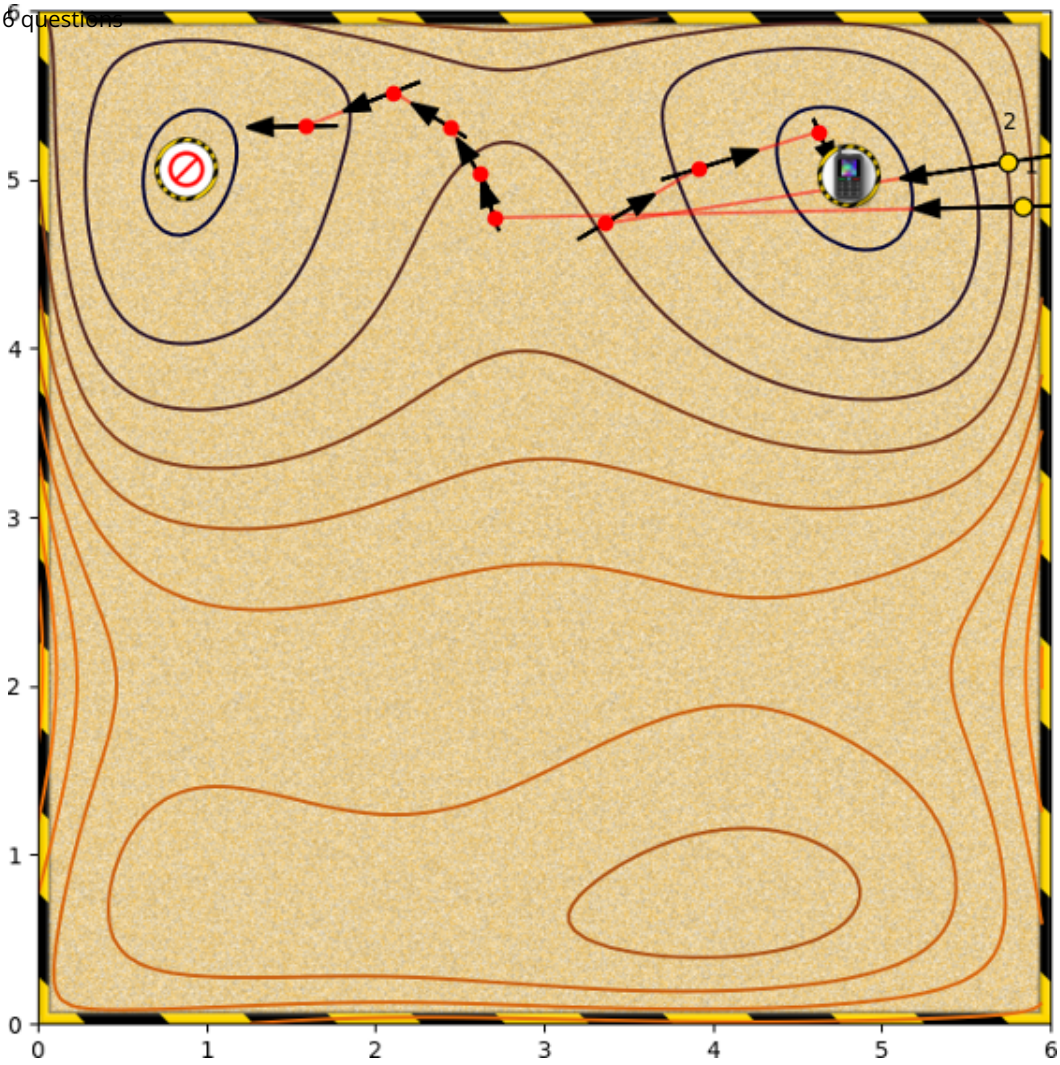

- There is noise in the system
- The Jacobian at the starting point is very large.

Correct

This is causing the algorithm to overshoot. In one case into a different basin.

- The marked points are saddle points.
- None of the other options.

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