

# (E) A Typical Problem (1/1) [Solution]

Answers:

E1.

(a) *has legs*

(b) *underwater*

(c) *has a shell*

E2.

(1) Y

(2) Y

(3) N

(4) N

(5) N

(6) Y

E3. *hermit crab*

E4.

(7) NYY/NYN/YNN

(8) NNY/NNN/YNN

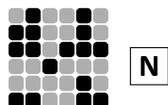
(9) YNY/NNN/NNN

(10) YNY/YYY/YNY

(11) NYN/YNY/NYN

(12) YNY/NNN/YNY

E5.



E6. G & Q (any order)

Solution: In OCR, each feature subdivides the  $6 \times 6$  grid into nine  $2 \times 2$  squares and computes each feature individually with a Y or N answer for each  $2 \times 2$  sub-square. It then concatenates each Y/N answer, separating lines of three with a forward slash to denote one row of sub-squares.

- Feature 1: Y if exactly 3 out of 4 pixels in the sub-square are black pixels and N otherwise.
- Feature 2: Y if at least 1 pixel in the sub-square is a black pixel and N otherwise.
- Feature 3: Y if only two edge-adjacent pixels in the sub-square are black pixels and N otherwise.
- Feature 4: Y if only two pixels touching at a corner in the sub-square are black pixels and N otherwise.

Note that there are no sub-squares with all 4 pixels being black pixels, so contestants may have different interpretations of features 1 and 2.

