

**Problem #5.** The patterns of bars of unit width  $\bullet\bullet$  (at both ends) and  $\circ\bullet\circ\circ$  (in the middle) frame two blocks of six digits. Each digit is shown as four bars of widths 1–4, with a total width of 7. There are three codes for each digit, one of which (R) is used on the right and two (A and B) on the left.

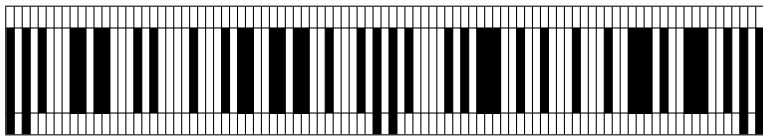

The pattern of As and Bs on the left gives the subcode. Each pattern starts with A (this indicates that the barcode is the right way up, otherwise it would start with B, the mirror image of R) and contains exactly three As. The problem features all possible patterns except AABABB (subcode 1).

		A: $\circ\bullet\circ\bullet$	B: $\circ\bullet\circ\bullet$	R: $\bullet\circ\bullet\circ$
0	—	3211	1123	3211
1	?	2221	1222	2221
2	AABBAB	2122	2212	2122
3	AABBBA	1411	1141	1411
4	ABAABB	1132	2311	1132
5	ABBAAB	1231	1321	1231
6	ABBBAA	1114	4111	1114
7	ABABAB	1312	2131	1312
8	ABABBA	1213	3121	1213
9	ABBABA	3112	2113	3112
X	AAABBB	—	—	—

Only barcodes for meat, cheese, etc., which have random weights have the price included as part of the barcode (for the rest, the price is looked up from the store’s computer system). These are produced in-store (subcode 2) and so do not have a standard layout, but in the two that are given in the problem the last four digits before the checksum are the price (pork steak: 0416 → 4 euros and 16 cents).

- (a)
1. (E);
  2. G, checksum = 2;
  3. C;
  4. D;
  5. A, Germany;
  6. I;
  7. H, cost = 4 euros and 74 cents;
  8. B, full code = 7-317442-030049;
  9. F.

(b)

- (c)
- This barcode is upside down (it starts with a B, not with an A), so it must be turned over and written backwards.

Norway= 70, full code = 7-022070-000035.

