Problem 1: Recalled Hardware

Input	Output	Explanation
serialNumber = NJ812162e0p	false	It was manufactured in New Jersey in 2016 after February, so it is not faulty
serialNumber = AL51016799n	false	The unit was manufactured in Alaska in October of 2016 but UID is divisible by 9 and not by 27 so it is not faulty
serialNumber = NY11016872d	true	
serialNumber = NJ701161D43	true	
serialNumber = PA601165oo5	false	

Problem 2: Newmerals (2 points)

Input	Output	Explanation
newmeralA = AACA **newmeralB** = BCAD **operator** = :	ABACCAAD	
newmeralA = DACB **newmeralB** = DBCC **operator** = ^	ABDC	
newmeralA = CA **newmeralB** = DB **operator** = %	BDCADB	
newmeralA = CC **newmeralB** = DB **operator** = ^	DC	
newmeralA = DCCBCD **newmeralB** = ADDBCD **operator** = :	DACDCDBBCCDD	
newmeralA = DCC **newmeralB** = BAC **operator** = %	CABDCCBAC	
newmeralA = CAB **newmeralB** = DCAABC **operator** = :	CDCAAABBC	

Problem 3: nCrypt

Input	Output	Explanation
message = MnQ rzmc hm dpncvtujpo	1	Rot 25 would return “Nor sand in eqodwuvkqp” which would give a high score if you don’t differentiate between words.Rot 1 returns a string containing “combustion” **Make sure you only count the words, not word fragments**
message = pbSkrqh'v dug nqrzq wr hashulhqfh vsrqwdqhrxv frpexvwlrq.	3	“myPhone’s are known to experience spontaneous combustion”
message = Abnu’f zlCubar pbzohfgrq juvyr ur jnf ubyqvat vg. Uvf unaq vf fzhqtrq.	13	“Noah’s myPhone combusted while he was holding it. His hand is smudged.”
message = Em vmml bw lckb bixm Vwip bw bpm eitt ivl LLWA pqa amzdmz jmnwzm Vme Eidm kibkpma ca	8	“We need to duct tape Noah to the wall and DDOS his server before New Wave catches us”
message = Jkwd Nqxej byxwcjwnxdb lxvkdbcrxw lxOgnmd nq ctbs szod?	25	“Jkwd Nqxej” = rot(Noah Rubin, 22) “byxwcjwnxdb lxvkdbcrxw” = rot(“spontaneous combustion”, 9) lxOgnmd nq ctbs szod? = rot(“myPhone or duct tape?”, 25). This one has the largest multiplier, so the program should return 25.

Problem 4: Vending Machine

Sample Data

Input	2d Array Representation of path	Output	Explanation
{{“A1”, “C9”}, {“C9”, “B3”}, {“B3”, “A7”}, {“A7”, “D1”}, {“D1”, “CheetoMojito”}, {“A2”, “A3”}, {“A3”, “A4”}, {“A4”, “A2”}, {“C4”, “Boom”} {“E1”, “E4”} {“E4”, “F5”}}			D1, C9, A1 → “CheetoMojito” C4→ “Boom” E1, E4 → “Nothing” A2, A3, A4 → “Loop”
{{“A1”, “F9”}, {“B2”, “F8”}, {“C3”, “F7”}, {“C4”, “F6”}, {“F6”, “A1”}, {“F9”, “KitKat”}, {“F7”, “C3”} {“B6”, “MM”}}			F6, A1, F9 → “KitKat” B2 → “Nothing” F7, C3 → “Loop” B6 → “MM”
F1 F2 F2 F3 F3 F4 F4 F1 F5 F6 D8 C3 C3 B2 B2 A1 A1 Cupcake			F1, F2, F3, F4 → “loop” F5 → “Nothing” D8, C3, B2, A1 → “Cupcake”
A1 A2 A2 Gatorade A3 A4 A4 A3 A5 B9			A1, A2 → “Gatorade” A3, A4 → “Loop” A5 → “Nothing”

Problem 5: **Newber**

Sample Data

Input	Table Representation of input	Output	Explanation

map =	{
	{-, -, |, -}
	{|, -, -, -}
	{|, -, |, O}
	{X, -, |, -}
	}
		RUURRD	

map =	{
	{-, -, X, -}
	{|, -, |, |}
	{|, -, |, -}
	{-, -, -, O}
	}
		LDDDRR	

map =	{
	{X, |, -, -}
	{-, -, -, -}
	{|, -, |, |}
	{-, -, -, O}
	}
		DRDDRR	

map =	{
	{-, -, -, -}
	{|, O, |, -}
	{|, -, |, -}
	{|, -, -, X}
	}
		LLUU	

map =	{
	{X, -, -, -}
	{|, |, |, -}
	{O, -, |, -}
	{|, -, -, -}
	}
		RRRDDDLLUL	

Problem 6: Mole in the Company

Input	Output	Explanation
3 1 2 9	9	
4 3 9 1 0 6 2 4 1	-12	
1 6 7 9 4 3 2 5 7 0 0 1 2 4 5 4 1 1 2 2 5 0 4 -2 3	21	
2 3 1 0 3 4 7 5 6 1 3 4 5 6 7 2 6 5 9 0 1 8 2 3 4 8 0 1 2 3 4 5 6 7 9 1 2 3 4 5 6 7 8 0 7 1 8 0 2 3 2 1 12 1 2 1 3 4 5 2 1 -2 3 4 3 2 4 5 0 2 9 2 5 3 2 1 2 2 -1 2 5	6874	