

# Assignment 38

Alex Clemmer

Student number: u0458675

## 1

Given some  $a_i$ , what we want to do is to find some  $a_t \in a_i \dots a_n$  such that the distance between  $a_i$  and  $a_n$  is as close to 200 as possible. So for example, if we are given  $a_3$ , our job is to find the  $a_t$  that occurs after  $a_3$  such that  $\text{dist}(a_t) - \text{dist}(a_3)$  that is closest to 200.

This gives us a simple recursive relation:

$$H(i) = \min(|200 - (a_t \in a_i \dots a_n) - a_{i-1}|) \quad (1)$$

This of course suggests a quick algorithm: examine every element in the range  $a_i \dots a_n$ , keeping track of how close the distance between your current element (call it  $a_t$ ) and  $a_{i-1}$  (your previous element) are; the instant this distance begins *growing* again, stop—it's not going to get smaller ever again.