Tutorial 10 - String Matching
CS 240E Winter 2022
University of Waterloo
Monday, March 21st, 2022

1. **Cyclic Shift:**
   Given two strings w and x of length n, determine if w can be obtain by cyclically shifting the characters of x. For example, your algorithm should return `true` if the inputs are `alloy` and `loyal`, and `false` if the inputs are `tarot` and `otter`. Your algorithm should take $O(n)$ time for two strings of length n.

2. **Boyer-Moore:**
   Apply the Boyer-Moore algorithm to the following pattern and text. Show two shifts each with only the bad-character heuristic, or with the good-suffix heuristic.

T :	d	a	y	s	a	y	m	a	y	a	a	a	y	b	a	y	l	a	y	k	a	y	r	a	y	j	a	y
P :	d	a	y	d	a	y	h	a	y	a	y	a	y															

3. **Most Common Substring:**
   Let s be a string of length n and let $\mathcal{T}_s$ denote the corresponding suffix tree. For an integer parameter $1 \leq \ell \leq n$, give an $O(n)$ time algorithm that finds the most commonly occurring substring of length ℓ in s.