

# CSE 3302/5307 Programming Language Concepts

## Lab Experiment

Nov 29, 2023

### Problem 1

#### Is this a Prime?

Write an OCaml function to check if a number is prime.

#### Test Example

```
1  #use "prime.ml";;  
2  is_prime 5;;  
3  -: bool = true
```

### Problem 2

#### Finding the Length of the Longest Consecutive Sub-sequence in a List of Integers.

Implement a function in OCaml that takes a list of integers and returns the length of the longest consecutive elements sequence.

#### Test Example

```
1  #use "lcs.ml";;  
2  longest_consecutive_sequence [1; 2; 3; 5; 6; 7; 8; 9];;  
3  -: int = 5
```

## Problem 3

### Implementing a Map Function for Binary Trees.

Write a function in OCaml that applies a given function to each element in a binary tree, returning a new tree with the results.

#### Test Example

```
1  #use "maptree.ml";;
2  let tree1 = Node(1, Node(2, Empty, Empty), Node(3, Empty, Empty))
3  let double x = 2 * x
4  map_tree double tree1;;
5  — : int binary_tree =
6  Node (2, Node (4, Empty, Empty), Node (6, Empty, Empty))
```

**Hint:**we need define the type first.