

# CO225 Lab 6

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1. We can define our own boolean type using variants.

```
type boolean = True | False
```

- (a) Define functions for the logical operations **implies** and **xor**.
  - (b) Extend this type definition to three-valued logic. Define the **and** and **or** operations for this type.
2. In the lecture we saw the following types defined for use in a drawing program.

```
type point2d = { x:float; y:float }  
type element =  
| Circle of point2d * float (* centre coordinates and radius *)  
| Line of point2d * point2d (* end-point coordinates *)
```

- (a) Write a **rotate** function that rotates an **element** by a given angle. You may use the function you wrote to rotate a coordinate in a previous lab.
- (b) Suppose we want to draw elements using various *styles*, which have the following attributes,
  - The “stroke” such as, Pencil, Brush, Crayon
  - An integer stroke width.
  - Stroke colour as defined by a variant type colour<sup>1</sup>.

Define a type **style** to store the attributes above. Modify the **element** type to have a style for each element.

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<sup>1</sup>as in the lecture slides.