

CO225 Lab 5

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1. Define two record types to represent complex numbers in cartesian form $x + iy$ and polar form $r \cos \theta + ir \sin \theta$.
 - (a) Define a function that returns whether a number in polar form is real (complex part is zero), imaginary (real part is zero), or mixed.
 - (b) Define a function to convert from cartesian to polar form.
2. Define a record type to represent a triangle in 3-dimensional space. Use a tuple to store the coordinates of each vertex.

Define a function that checks whether the triangle is equilateral, isosceles, scalene¹.

3. (a) Define a record to store company employee details given below.
 - first and last name
 - salary
 - marital status

Use appropriate data types for the fields.

- (b) Now define a record to store details of a company department.
 - department name
 - head

What should the type of the field “head” be?

- (c) Write a function to check whether two departments have the same head.

¹3, 2, and no equal sides respectively