

# cs805 Assignment 1

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## Abstract

This assignment is written in literate programming style, generated by noweb, and rendered by LaTeX.

## 1 Question 1

Let  $n$  be a 3 tuple vector, and given that it is along  $V1$ . It is trivial that we can imply:

$$n = \frac{[V1_x, V1_y, V1_z]}{[|V1|, |V1|, |V1|]}$$

where  $|V1| = \sqrt{V1_x^2 + V1_y^2 + V1_z^2}$

Thus  $n$  is now known.

By the definition of cross product, denoted as  $\times$  here, knowing that  $V1$  and  $V2$  is non-collinear, we can also derive:

$$u = \frac{V2 \times V3}{[|V2 \times V3|, |V2 \times V3|, |V2 \times V3|]}$$

Finally, it is also trivial that:

$$v = u \times n$$

Therefore  $u, v, n$  are now all known.