**Assignment**

Provided are 2 VCF files: freebayes\_raw.vcf and varscan\_raw.vcf files as input for this task.

Write an application in **Python** to merge these into a single VCF file, so that overlapping variants are present only once in the output file. While merging:

* Add a new tag in the **INFO** field of each variant , named ‘calledBy’ , that will have name of the tool which called the variant. If a variant is called by both tools, set value as ‘calledBy=Freebayes+VarScan’.
* For the common variants, rename any common **INFO and FORMAT** tags annotated by both tools by prefixing the tool name in the name of the tag. Ex: if ‘DP’ tag is annotated by both callers, rename the tags as ‘Freebayes\_DP’ and ‘VarScan\_DP’ while merging.

**Note:**

1. Follow coding best practices and make sure to write the application which is industry standard and is reliable, scalable and maintainable.
2. Do not use Pandas or any other vcf reader modules to read vcf files. Solve using core python data structures.