Project 3rd year Computer

It is required to modulate three speech signals using the following scheme:

$$s(t) = x_1(t)\cos\omega_1 t \ + x_2(t)\cos\omega_2 t + x_3(t)\sin\omega_2 t$$

and then perform synchronous demodulation.

Select reasonable values for ω_1 and ω_2.

Pick three speech signals with your own with max time 10 sec.

1) Obtain the modulated signal. Plot it in time domain. Plot its magnitude spectrum.
2) Perform synchronous demodulation to restore the three signals.
   Listen to each signal after demodulation and comment on the interference from other signals.
3) Perform demodulation in the case of phase shifts of 10, 30 and 90 degrees between the local carrier and the incoming carrier.

Comment on the demodulated speech signals in (2) and (3).

Important note: any two codes or two reports are similar the grade will be zero.

- The team can be up to two students
- The deadline is up to 16/1/2021
- One member of the team will attach the report on classroom and put the codes at the end of the report in one pdf with name "Team #"
  For example if your team number is 3, the name of the file is "Team 3"
- Attach the three speech signals with the pdf with as "Team #_ speech signal_1", "Team #_ speech signal_2" and "Team #_ speech signal_3".