Production QA :

Questions:

1. Questions 1:

   Changing the threshold (TH) in the loan offer generation process can impact the final decisions and rates offered to applicants.
   the threshold might affect the response:

   1. **Higher Threshold (TH):**
      - If you increase the threshold, it means the rate model score needs to be closer to 1 for a particular interest rate to be selected. This could lead to fewer offers being approved, as it becomes more challenging for applicants to meet the higher threshold.
      - Offers with rate model scores closer to 1 would likely have lower interest rates, as they would need to meet a higher standard to qualify.

   2. **Lower Threshold (TH):**
      - Conversely, reducing the threshold would make it easier for offers to qualify. More applicants could meet the threshold, potentially resulting in more approved offers.
      - Offers with rate model scores closer to -1 would likely have higher interest rates, as the threshold for acceptance is lower.

   A higher threshold may lead to fewer approved offers but potentially lower interest rates, while a lower threshold may result in more approved offers but potentially higher interest rates

2. Questions 2:

   Errors in loan applications can occur due to various reasons:

   - **Offer Generator Error**: This point addresses a scenario where an applicant requests a loan lower than $1000, causing one of the generated amounts to be negative
   - **Incomplete Credit Features**: If the applicant's credit features retrieved from the credit bureau API are incomplete or missing crucial information, it could lead to errors in the application process.
   - **Check information:** Check the provided information before we use them in the model, because it could be that we got missing information or incorrect information from the requested person.

3. Questions 3:

   Debt-to-Income (DTI) is a financial ratio that compares an individual's monthly debt payments to their gross monthly income. It's a measure of their financial health and ability to take on more debt.
   there are some reasons to applied DTI at the end of the flow:

   - First, they check the applicant's credit and risk to decide the best interest rate for them.
   - They look at the applicant's DTI last to make sure they can afford the loan after the interest rate is set.
   - This final check makes sure the applicant won't struggle to pay back the loan.
   - By checking DTI last, they make sure the applicant meets all the criteria before giving them the loan offer, increasing the chance they'll accept it.

4. Questions 4:

App1:

1. Offer 1: Decision is not correct it should be declined because the DTI > 0.5.
2. Offer 3: Rate should be 13, because the pricing score is between (0.2, 0.5).

App 2:

Offer 2 is declined, but Offer 3 is approved, even though Offer 3 is for a bigger amount. This doesn't seem to make sense because usually, if someone qualifies for a bigger loan, they should also qualify for a smaller loan.
So, there might be a problem with the interest rate or the risk score for Offer 2 and Offer 3. Something seems off because it doesn't make sense to approve the bigger loan and decline the smaller one.

Bonus Questions1:

App3:

According to **Convertor A** Pre alignment:
Rate = IntRate + Risk Factor
Offer1 amount 7000: 10 = IntRate -1 => IntRate = 11
Offer2 amount 8000: 10 = IntRate + 0 => IntRate = 10
Offer3 amount 9000: 10 = IntRate + 0 => IntRate = 10
According to **Convertor A int rate alignment** Post alignment**:**
Offer1 amount 7000: IntRate = 11 => Rate = 11 -1 = 10
Offer2 amount 8000: IntRate = 11 => Rate = 11 -0 = 11
Offer3 amount 9000: IntRate = 11 => Rate = 11 -0 = 11

So, the problem is Rate of offer2 and offer 3 is not correct according to **Convertor A int rate alignment,** because of that the Pricing Score should also changed:

Correct Result:
Offer 2: Rate = 11 Pricing Score (-0.6, -0.21)
Offer 3: Rate = 11 Pricing Score (-0.6, -0.21)