1. Assume that you are the technical manager of a software development organization. A Client approached you for a software solution the problems stated by the client have uncertainties which lead to loss if it not planned and solved which software development model you will suggest for this project –justify. Explain that model with its pros and cons and neat sketch

   Spiral model

   Explanation

   Project risks are caused by the problem statement's uncertainty. Consequently, the **spiral model** can be applied to the creation of such a project.

   Advantages:

- Later on, it is possible to add functionality or make adjustments.
- Risk management benefits from continuous or repeated development.
- With spiral development, features are developed quickly and methodically.

   Disadvantages:

- Risk of failing to stick to the budget or schedule.
- Only large projects benefit from spiral development, which also necessitates proficiency in risk assessment.
- Because there are intermediary steps, documentation is more.

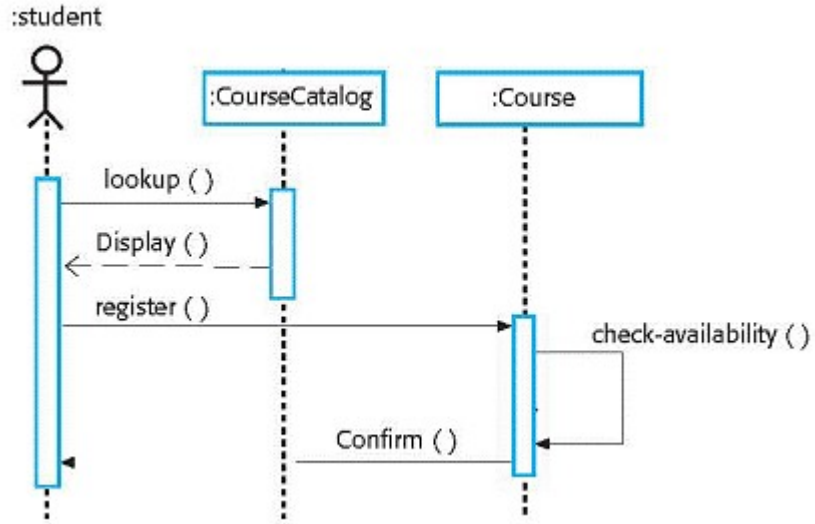
   Diagram of Spiral Model……

2. Develop an online railway reservation system, which allows the user to select route, book/cancel tickets using net banking/credit/debit cards. The site also maintains the history of the passengers. For the above system, list and draw the use case scenario and model the above specification.

   https://www.geeksforgeeks.org/online-railway-ticket-reservation-system/

3. Develop the process of ordering a pizza over the phone. Draw the use case diagram and also sketch the activity diagram representing each step of the process, from the moment you pick up the phone to the point where you start eating the pizza. Include activities that others need to perform. Add exception handling to the activity diagram you developed. Consider at least two exceptions (e.g. delivery person wrote down wrong address, deliver person brings wrong pizza).

4. Develop a sequence diagram showing the interactions involved when a student registers a course in a university. Courses may have limited enrolment, so the registration process must include checks that places are available. Assume that the student accesses an electronic course catalog to find out about available courses.



5. Consider the following program segment.

```
/*num is the number of function searches in a pre-sorted integer array arr*/
int bin_search(int num)
{
int min , max; min=0; max=100;
while(min!=max) {
if(arr[(min+max)/2]>num)
max=(min+max)/2;
else if(arr[(min+max)/2]
min=(min+max)/2;
else return((min+max)/2);
}
return(-1);
}
```

(i)Draw the control flow graph for this program segment.

(ii)Define cyclomatic complexity.

(iii)Determine the cyclomatic complexity for this program.(Show the intermediate steps in your computation. writing only the final result is not sufficient)