```java
@Entity
public class Etudiant {
    @Id
    @GeneratedValue(Strategy = GenerationType.Identity)
    private int id;

    private String nom
    //const + getter + stter.


@Entity
public class Enseignant {
    @Id
    @GenerationvaLue(Strategy = GenerationType.Identity)
    private int id;

    private String nom;
    private String prenom;


@Entity
public class soutenance {
    @OneToOne
    private Etudiant et;
    private String titre;
    private String date;
    private int heure;
@ManyToOne @JoinColumn(name = "idm")
    Enseignant membre;                                    + ids

@ManyToOne
@JoinColumn(name = "idE")
    Enseignant encadrant;
@ManyToOne
@JoinColumn(name = "idpre")
    Enseignant président.
```

TDS:

```java
class GestionBeImp implements IGestionTfe {

    void addSout(soutenance s) {
        em.getTransaction().begin();
        em.persist(s);
        em.getTransaction().commit();
    }

    List<Enseignment> listEns() {
        Query q = em.createQuery("select e from Enseignment e ");
        ...getResultList();
        List<Enseignment>e = q.getResultList();
        return e;
    }

    List<Etudiant> listEtd() {
        Query q = em.createQuery("select et from Etudiant et");
        List<Etudiant> le = q.getResultList();
        return le;
    }

    List<soutenance> listS() {
        Query q = em.createQuery("select st from soutenance st");
        List<soutenance> ls = q.getResultList();
        return ls;
    }

    public soutenance getSoutenanceByDateAndFeur(String date, int feur) {
        Query q = em.createQuery("select r from soutenance s where s.date = :d and
                                 s.feur = :f");
        q.setParameter("d", date);
        q.setParameter("f", feur);
        return q.getSingleResult();
```

EntityManager em = ...
createEntityManager

```
= Public Sentence voiB Etd (int id) {
Query q = em.createQuery("select n from sentence c where c.id=:id");
q.q setParameter ("id", id);
return q. getSingleResult ();  }

| Contrôleur |

public Servlet extends HttpServlet {
  Gestion GBeImp gsA = new GestionImpl
  & GestionGBeImp gsA;  // assign

doGet ( __ request, __ response ) {
  List<Etudiant> le = gsA.getAll Etudiant ();
  List<sentence> ls = gsA.list();
  request. setAttribute(s, ls);   // por étudian et enseignant;
  request. getRequestDispatcher (index.jsp") .forward (Request, response );
}

doPost ( __ request, __ response ) {
  String date = request.getParameter ("date");
  int flaue = Integer.ParseInt (request.getParameter ("heure"))
  String titre = request.getParameter ("date")
  int ide = Integer.ParseInt (request.getParameter ("ide")
  int ide = "   "   "   "   (ide)
  int idP = "   "   "   "   (idP)
  int idm = "   "   "   "   (idm)

  Sentence S = gsA. voiBEt (ide)
  sentence e = gsA.getEnsById(ide);
  Enseignan Enc
     "  "  pres  = "   "   "   (idP)
     "  "  memP = "   "   "   (idm)
  Etudiant e = gsA.getEtudiantById (ide)
  sentence Sg = gsA.getSentenceByDateAndHeure(Date, f)
}
```

JSP

```
<form action = "Principal" method = "Post">

<input type = "text" name = "title" value = "${P.title}">

<select name = "Je">

<c:forEach items = "${L}" var="P">

<option value = "${P.ide}"> ${P.nom} </option></select>


<select name = "Jem">

<c:forEach items = "${L}" var = "Lm">

<option value = "${m.idc}"> ${P.nom} </option> </c:forEach>
</select>

<input type= "text" name=Date" value = "${P.Date}">

<input type = "number" name = "flem" value = "${P.flem}">

<select name = "Jem">

<c:forEach items = "${flem}" var= L>

<option value = "${L.idP}"> ${L.nom} </option></select>

<select name = "Jem" var= L>

<c:forEach items =${flem} var= L>

<option value =${L.ids}> ${L.name} </option> </c:forEach></select>
```