

题目

An Intellectual Property Management Bureau (IPMB) wants to build a Patents Application Processing

System (PAPS) to automate its patents process and improve the efficiency.

After inputting the name and email, the applier can register a new account. When he/she login the system, he/she can modify his/her profiles including the affiliation, phone number, address, etc.

The applier can submit his/her patent application to the PAPS system. For each patent, the applier should select the patent topic catalog and input the following information: patent name, author, affiliation, abstraction, key word, attached file. Then, the applier can check the patent approval state, submit the corresponding letter according to the reviewers' comments.

The system will assign a primary engineer(PE) for every patent to process the application. PE will check the application format conformance briefly, then notify the applier that the patent will be reviewed formally or rejected directly. Then the PE will assign and invite the reviewers, and make the decision (approved, suspended, rejected) according the comments of reviewers. The reviewer can check the reviewing task, download the application, and submit the comments and decision online. Every PE can process several patents simultaneously. To facilitate the PAPS, the system need maintain some lists, such as reviewers list, patent topics list.

PAPS

专利处理系统PAPS:

申请人

基础功能: 用户用name email注册账户, 登录, 修改简历(机构, 手机, 地址, 等)

主要功能: 提交专利申请, 对于每个专利, 申请者选择主题目录, 输入 专利名称, 作者, 机构, 摘要, 关键词, 附件。

辅助功能: 申请者检查专利批准状态。用户根据评审人评论提交对应信件。

主工程PE, 一对多专利

主要功能: **简要的检查**申请格式, **通知**申请人(正式审查or驳回), 指派评论家,

评论家:

查看评论任务, 下载申请, 在线提交评论和决定意见。

申请人生产专利申请, 专利按照主题分类, PE消费多个专利申请, 每次消费生产通知。

PE, 评论家生产通知。

PE生产评论家

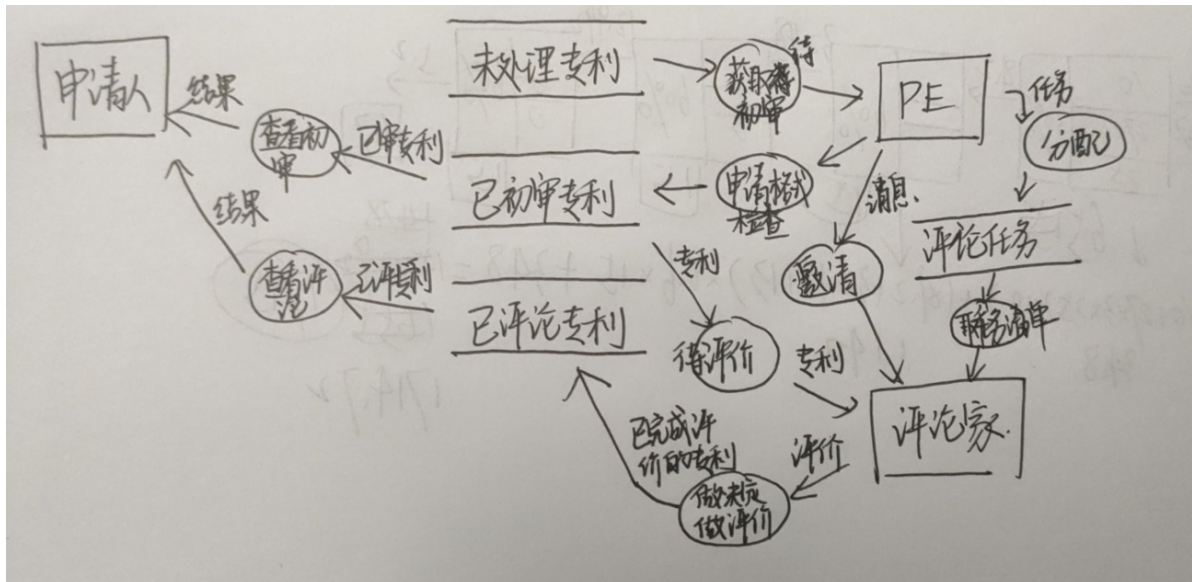
Please draw the data flow diagram for processing a patent. (12 pts.)

申请人: 选择主题目录, 基本信息录入, 提交专利申请, 检查申请状态。

PE: 初审申请格式, 通知申请人专利情况, 对于通过的专利, 指派评论家评论。

评论家: 查看评论任务, 下载专利申请, 提交评论, 提交决定。

外部实体，方框：申请人，评论家，PE，

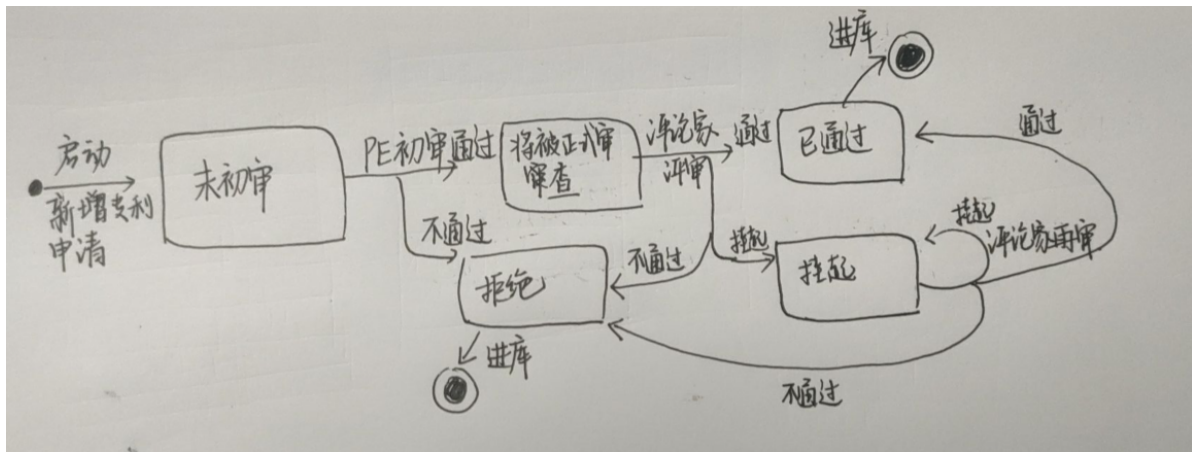


Please give the two **CRC cards** for classes “applier” and “patent”. (10 pts.)

| | |
|-------------|-----|
| 类名: 申请人 | |
| 描述: 申请专利的用户 | |
| 职责 | 合作者 |
| 注册账户 | |
| 登录 | |
| 修改简历 | |
| 提交专利申请 | PE |
| 查初审状态 | PE |
| 查专利评价 | 评论家 |
| 提交评论对初审 | 评论家 |

| | |
|------------------------|-----|
| 类名: 专利 | |
| 描述: 有三类: 未初审, 已初审, 已评论 | |
| 职责 | 合作者 |
| 新增专利申请 | 申请人 |
| 更新初审状态 | PE |
| 存储评论与未定 | 评论家 |
| 下载 | 评论家 |

Please give the **state diagram** for the “patent” class. (8 pts.)



Please draw the **web-based software architecture of PAPS.** (10 pts.)

| | |
|--------------------|--|
| View: | ReviewerUI ApplierUI PEUI |
| Controller: | ReviewerController ApplierController PEController |
| Service: | TaskService PatentService InviteService ReviewService ApplierInfoService CommentService DecisionService |
| DAO: | TaskMapper PatentMapper InviteMapper ReviewMapper ApplierInfoMapper CommentMapper DecisionMapper |
| Model | TaskEntity PatentEntity InviteEntity ReviewEntity ApplierInfoEntity CommentEntity DecisionEntity |

Model下面连着DataBase

Please describe the **testing strategy** for PAPS product. (10 pts.)

单元测试：验证每个函数或者方法是否正确

内容测试：验证软件中的文本数据是否完整一致

接口测试：验证不同模块之间是否能够正常通信，API测试和UI界面测试

导航测试：验证前端交互导航是否正确

集成测试：验证多个模块之间集成是否正确

回归测试：验证更新后旧代码是否还有问题。

配置测试：验证配置，如不同硬件和网络环境下是否正常。

性能测试：验证不同负载下的性能表现，响应时间，吞吐量，资源占用

安全测试：保证软件能够抵御攻击，保证信息安全。

认证测试：保证软件符合法规。