1. 注册

```
create procedure registerCursor (user_name char(10), pass_word char(10), out msg
char(20))
  begin
    declare u char(10);
    declare p char(10);
    declare done bool default false;
    declare uvalid bool default true;
    declare cur cursor for select * from 账户;
    declare continue handler for not found set done = true;

    if not pass_word regexp '^[:alnum:]{4,10}$' then
      set msg = '密码必须为4-10位字母或数字';
    else
      open cur;
      fetch_loop: loop
        fetch cur into u, p;
        if done then
          leave fetch_loop;
        end if;
        if u = user_name then
          set uvalid = false;
          leave fetch_loop;
        end if;
      end loop;
      if not uvalid then
        set msg = '用户名已存在';
      else
        insert into 账户 values (user_name, pass_word);
        set msg = '注册成功';
      end if;
    end if;
  end;//
```

2. 登录

```
create procedure loginCursor (user_name char(10), pass_word char(10), out msg
char(20))
  begin
    declare u char(10);
    declare p char(10);
    declare done bool default false;
    declare uvalid bool default false;
    declare cur cursor for select * from 账户;
    declare continue handler for not found set done = true;

    open cur;
      fetch_loop: loop
        fetch cur into u, p;
```

```
        if done then
          leave fetch_loop;
        end if;
        if u = user_name and p = pass_word then
          set uvalid = true;
          leave fetch_loop;
        end if;
      end loop;

    if uvalid then set msg = '登录成功';
    else set msg = '用户名或密码错误';
    end if;
  end;//
```

3. 借书

```
create procedure borrowBookCursor (user_name char(10), book_no char(13), out msg
char(30))
  begin
    declare book_name varchar(50);
    declare bi char(13);
    declare bn varchar(50);
    declare nb int;
    declare benough bool default true;

    declare ru char(10);
    declare ri char(13);
    declare rn varchar(50);
    declare rbt datetime;
    declare rdt datetime;
    declare rrt datetime;
    declare rexist bool default false;

    declare done bool default false;
    declare cur_book cursor for select * from 书库;
    declare cur_record cursor for select * from 借阅记录;
    declare continue handler for not found set done = true;

    if not exists (
        select *
        from 账户
        where 用户名 = user_name
    ) then
      set msg = '用户名不存在';
    else
      open cur_book;
      fetch_book: loop
        fetch cur_book into bi, bn, nb;
        if done then
          leave fetch_book;
        end if;
```

```
        if bi = book_no and nb < 1 then
          set benough = false;
          leave fetch_book;
        end if;
      end loop;
      close cur_book;
      if not benough then
        set msg = '没有足够的书';
      else
        open cur_record;
        fetch_record: loop
          fetch cur_record into ru, ri, rn, rbt, rdt, rrt;
          if done then
            leave fetch_record;
          end if;
          if ru = user_name and ri = book_no and rrt is null then
            set rexist = true;
            leave fetch_record;
          end if;
        end loop;
        close cur_record;
        if rexist then
          set msg = '一个人不能同时借两本同样的书';
        else
          select 书名 into book_name from 书库 where ISBN = book_no;
          insert into 借阅记录 values
            (user_name, book_no, book_name, now(), date_add(now(), interval 30 day),
null);
          update 书库 set 数量 = 数量 - 1 where ISBN = book_no;
          set msg = '借书成功';
        end if;
      end if;
    end if;
  end;//
```

4. 还书

```
create procedure returnBookCursor (user_name char(10), book_no char(13), out msg
char(20))
  begin
    declare ru char(10);
    declare ri char(13);
    declare rn varchar(50);
    declare rbt datetime;
    declare rdt datetime;
    declare rrt datetime;
    declare rexist bool default false;

    declare done bool default false;
    declare cur_record cursor for select * from 借阅记录;
    declare continue handler for not found set done = true;
```

```
  open cur_record;
  fetch_record: loop
    fetch cur_record into ru, ri, rn, rbt, rdt, rrt;
    if done then
      leave fetch_record;
    end if;
    if ru = user_name and ri = book_no then
      set rexist = true;
      leave fetch_record;
    end if;
  end loop;
  close cur_record;
  if not rexist then
    set msg = '借阅记录不存在';
  else
    update 借阅记录 set 还书时间 = now()
      where 用户名 = user_name and ISBN = book_no;
    update 书库 set 数量 = 数量 + 1 where ISBN = book_no;
    set msg = '还书成功';
  end if;
end;//
```