Problem1

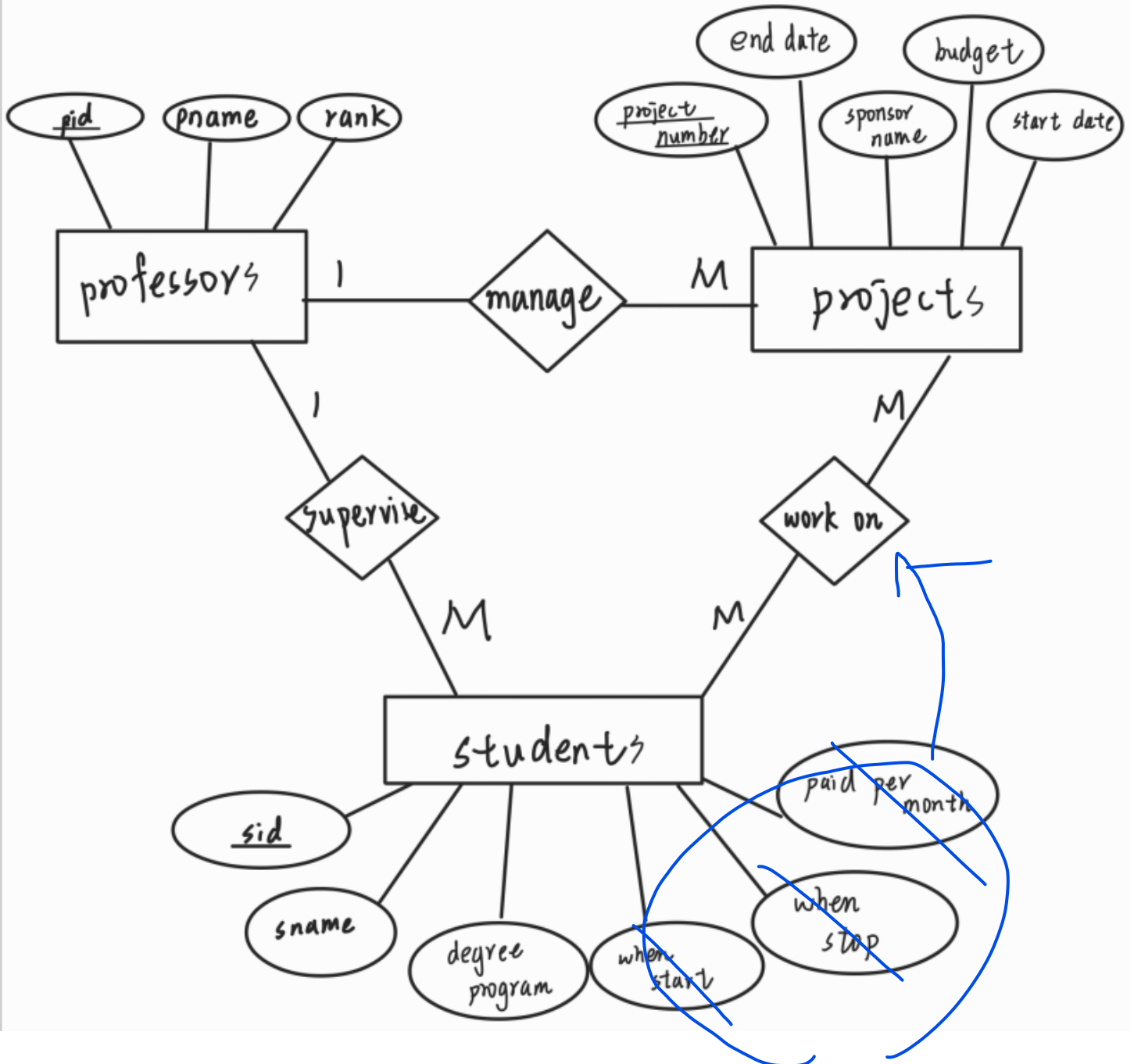**ER model**

Relational model

```sql
CREATE TABLE Professors (
  pid      INTEGER,
  pname    VARCHAR(20),
  rank     INTEGER,
  PRIMARY KEY (pid)
);
CREATE TABLE Projects (
  project_number    INTEGER,
  sponsor_name      VARCHAR(20),
  budget            INTEGER,
  start_date        DATE,
  end_date          DATE,
  PRIMARY KEY (project_number)
);
CREATE TABLE Students (
  sid               INTEGER,
  sname             VARCHAR(10),
  degree_program    VARCHAR(20),
  when_start        Date,
  when_stop         Date,
  paid_per_month    INTEGER,
  PRIMARY KEY (sid),
);

CREATE TABLE Manage (
  pid               INTEGER,
  project_number    INTEGER,
  PRIMARY KEY (pid, project_number),
  FOREIGN KEY (pid) REFERENCES Professors,
  FOREIGN KEY (project_number) REFERENCES Projects
);

CREATE TABLE Supervise (
  pid               INTEGER,
  sid               INTEGER,
  PRIMARY KEY (pid, sid),
  FOREIGN KEY (pid) REFERENCES Professors,
  FOREIGN KEY (project_number) REFERENCES Students
);

CREATE TABLE Work_on (
```

(handwritten annotation near "rank INTEGER,": arrow pointing to it with the note "VARCHAR 20")

```
    sid             INTEGER,
  project_number  INTEGER,
  PRIMARY KEY (sid, project_number),
  FOREIGN KEY (sid) REFERENCES Students,
  FOREIGN KEY (project_number) REFERENCES Projects
);
```

Problem2

post table			
post_id	forum_name	title	article
131	Gossiping	Girlfriend	How can I get girlfriend ?
252	Gossiping	Firends	I don't have a friend...
46	Joke	Knock	Knock! Knock! ...
151	Joke	Santa Claus	Hold! Hold! Hold!

popularity table	
forum_name	popularity
Gossiping	100
Joke	23

Yellow mark are primary key

reply table	
post_id	reply
131	"Haha"
131	"I don't know"
252	"Haha"
252	"I can be"
252	"QQ"
46	"Then?"
46	"What's the point ?"
151	"XDD"