Lab 5

PART 1:

1. CREATE TABLE confidence_score (
auto_mirna INT NOT NULL,
confidence INT NOT NULL
);

2. CREATE TABLE mirna_chromosome_build (
auto_mirna INT NOT NULL,
xsome VARCHAR (20),
contig_start BIGINT,
contig_end BIGINT,
strand CHAR (2)
);

3. CREATE TABLE mirna (
auto_mirna INT PRIMARY KEY,
mirna_acc VARCHAR (9) NOT NULL,
mirna_id VARCHAR (40) NOT NULL,
previous_mirna_id TEXT NOT NULL,
description VARCHAR (100),
sequence BLOB,
comment TEXT,
auto_species INT NOT NULL,
dead_flag BOOLEAN NOT NULL
);

4. CREATE TABLE mirna_species (
auto_id BIGINT PRIMARY KEY,
organism VARCHAR (10),
division VARCHAR (10),
name VARCHAR (100),
taxon_id BIGINT,
taxonomy VARCHAR (200),
genome_assembly VARCHAR (50),
genome_accession VARCHAR (50),
ensemble_db VARCHAR (50)
);

5. CREATE TABLE mirna_context (
auto_mirna INT NOT NULL,
transcript_id VARCHAR (50),

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overlap_sense CHAR (2),
overlap_type VARCHAR (20),
number INT,
transcript_source VARCHAR (50),
transcript_name VARCHAR (50)
);

6. CREATE TABLE mirna_database_links (
auto_mirna INT NOT NULL,
auto_db INT,
link TEXT NOT NULL,
display_name TEXT NOT NULL
);

7. CREATE TABLE mirna_literature_references (
auto_mirna INT NOT NULL,
auto_lit INT NOT NULL,
comment TEXT,
order_added BOOLEAN
);

8. CREATE TABLE mirna_databases_url (
auto_db INT PRIMARY KEY,
display_name TEXT NOT NULL,
url TEXT NOT NULL
);

9. CREATE TABLE literature_references (
auto_lit INT PRIMARY KEY,
medline INT,
title TEXT,
author TEXT,
journal TEXT
);
```

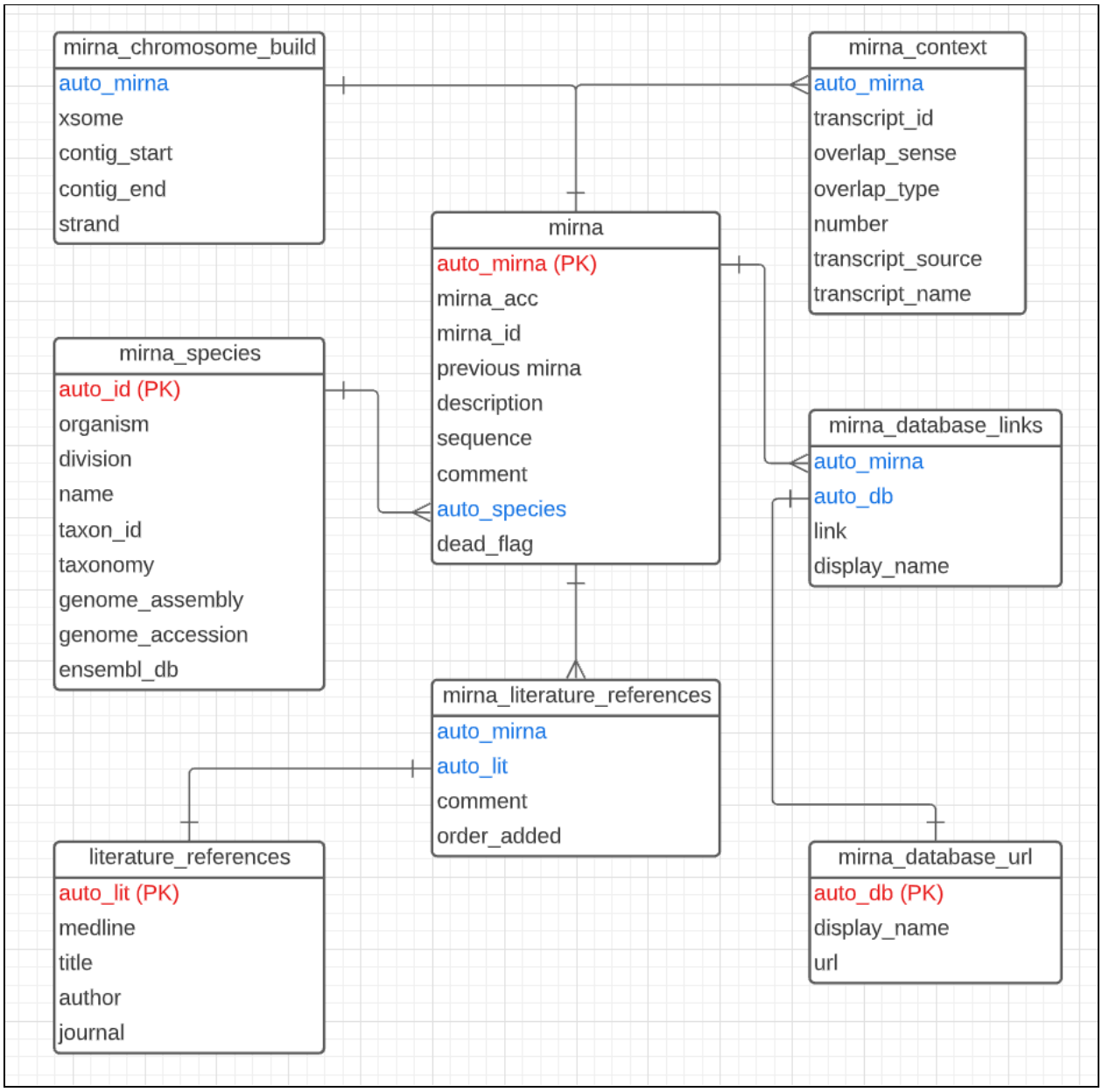

Fig: Depicting the ER diagram for the miRBase database where red font = primary key and blue font = foreign key

PART 3:

A1:

1.
select * from mirna where mirna_id like "%let-7%"

2.
select

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l.title,
l.author,
r.mirna_id
from
literature_references l
join
mirna_literature_references m
on
l.auto_lit = m.auto_lit
inner join
mirna r
on
m.auto_mirna = r.auto_mirna
where
r.mirna_id like "%let-7%"
```

3.

```
select
l.transcript_id,
l.transcript_name,
r.mirna_id
from
mirna_context l
inner join
mirna r
on
l.auto_mirna = r.auto_mirna
where
r.mirna_id like "%let-7%"
```

A2:

1.

```
select name, count(*) from mirna_species inner join mirna on mirna.auto_species =
mirna_species.auto_id group by mirna_species.name
```

2.

```
SELECT literature_references.journal, COUNT(DISTINCT mirna.sequence) FROM mirna JOIN
mirna_literature_references JOIN literature_references on
mirna.auto_mirna=mirna_literature_references.auto_mirna AND
mirna_literature_references.auto_lit=literature_references.auto_lit GROUP BY
literature_references.journal;
```

3.

SELECT literature_references.journal, COUNT (DISTINCT mirna.sequence) FROM mirna JOIN mirna_literature_references JOIN literature_references on mirna.auto_mirna=mirna_literature_references.auto_mirna AND mirna_literature_references.auto_lit=literature_references.auto_lit GROUP BY literature_references.journal ORDER BY COUNT (DISTINCT mirna.sequence) DESC LIMIT 5;

4.
SELECT literature_references.journal, COUNT (DISTINCT mirna_species.organism) FROM mirna_species JOIN mirna JOIN mirna_literature_references JOIN literature_references ON mirna.auto_species=mirna_species.auto_id AND mirna.auto_mirna=mirna_literature_references.auto_mirna AND mirna_literature_references.auto_lit=literature_references.auto_lit GROUP BY literature_references.journal ORDER BY COUNT (DISTINCT mirna_species.organism) DESC LIMIT 5;