

CS 327 Spring 2025

Midterm 2 (Practice)

TIME: 80 minutes

There are 22 questions on this test.

You may get partial credit for question 22 (a-e). If you finish early, use the extra time to double check your work. You may use notes, books or material given in class. You may not communicate with or take help from anyone, or use a web search during the exam.

Good luck!

Full Name _____

Do not write below this line. Your exam begins on the next page.

EXAM SCORES

Q1-Q10	Q11	Q12-Q21	Q22	Total

Circle True or False in questions 1-10 (1 point each)

1. A table remains even if all the data in the table is deleted. (FALSE / **TRUE**)
2. The more normalized a database, the better it is for all purposes. (**FALSE** / TRUE)
3. First normal form states attributes must be atomic. (FALSE / **TRUE**)
4. The functional dependency $A \rightarrow B$ implies $B \rightarrow A$ as well. (**FALSE** / TRUE)
5. Radio buttons are exactly like Checkboxes, but circular. (**FALSE** / TRUE)
6. The UPDATE queries can only update one record at a time. (**FALSE** / TRUE)
7. The Apache server has to be running on the client's computer for accessing a database application written in PHP. (**FALSE** / TRUE)
8. PHP runs on the server side but it can print its output on a webpage on the client side. (FALSE / **TRUE**)
9. The PHP code can be seen by doing "View page source" on the browser. (**FALSE** / TRUE)
10. When an HTML form sends data using POST, the data is not visible in the URL. (FALSE / **TRUE**)

11. Match by writing the letter from column 1 in the space provided (1 point each)

A	HAVING clause	Helps in resolving attribute name ambiguities	E
B	EXISTS	Specifies selection condition on records	D
C	GROUP BY clause	Specifies selection condition on groups	A
D	WHERE clause	Can be used with MAX and MIN	C
E	Table alias	COUNT(*) is more than 0	B

Choose the correct answer in questions 7 – 11 (1 point each)

12. *Select * from tableA, tableB*

If tableA has 10 rows and tableB has 9 rows, then the above query's output has

- a. 10 rows
- b. 9 rows
- c. 19 rows
- d. **90 rows**

13. Which of the following usually happens when a database is denormalized?

- a. Tables are joined
- b. Tables are split apart
- c. Tables are deleted
- d. None of the above

14. Which of these is the sign of a bad database design?

- a. Duplicated data
- b. Lots of NULL values
- c. Lack of foreign key constraints
- d. All of the above

15. Which of these normal forms are defined using prime attributes?

- a. 1 NF
- b. 3 NF
- c. BCNF
- d. All of the above

16. Which of these is optional in an update query?

- a. update
- b. set
- c. where
- d. None of the above

17. Which of these data types cannot be used with MAX and MIN?

- a. NUMERIC
- b. VARCHAR
- c. DATE
- d. None of the above

18. The _____ clause is used to sort the result set in ascending or descending order

- a. SORT BY
- b. ORDER BY
- c. ARRANGE BY
- d. None of the above

19. The following filename allows Apache to load the homepage without specifying its name manually in the address bar

- a. home.php
- b. index.php
- c. localhost.php
- d. Any of the above

20. If an HTML form contains a *password* input field and the data is submitted through GET, which of the following is true about the input

- a. It is not visible in the URL
- b. It is visible in the URL
- c. It is not visible in the input field
- d. Both (b) and (c)

21. Which of these allows us to print output to the browser in PHP:

- a. print
- b. echo
- c. write
- d. out.println()

22. Consider the following schema:

SUPPLIERS (SID : integer, SNAME : string, ADDRESS : string)

PARTS (PID : integer, PNAME : string, COLOR : string)

CATALOG (SID : integer, PID : integer, COST : real)

The key fields are underlined, and the domain of each field is listed after the field name. Thus, SID is the key for SUPPLIERS, PID is the key for PARTS, and SID and PID together form the key for CATALOG. The CATALOG relation lists the prices charged for parts by suppliers. CATALOG.SID is a foreign key referring to SUPPLIERS.SID and CATALOG.PID is a foreign key referring to PARTS.PID. Write the following queries in SQL. **[25 points]**

- a. List the SID and names of all suppliers who supply some part that is red, or some part costing more than 1000. A supplier must not appear more than once in the list. **[5 points]**

```
select sid, sname
from suppliers s
where sid is (select sid from catalog where cost > 1000)
or sid in (select sid from catalog, parts where catalog.pid = parts.pid
and color = 'red')
```

- b. Create a new record in the database to reflect the fact that the supplier with SID 222 (who is already in the database) is now supplying part with PID 50 (also in the database) at the cost of \$350 per part. [5 points]

```
insert into catalog(sid, pid, cost)
values (222,50,350)
```

- c. List the SIDs of each supplier, and the total and average costs of all parts supplied by that supplier [5 points]

```
select s.sid, sum(cost), avg(cost)
from catalog
group by sid
```

- d. List the SIDs of all suppliers who are in the database but don't supply any parts.
[5 points]

```
select s.sid
from supplier s
where sid not in
(select sid from catalog)
```

- e. List the SIDs and names of suppliers, and the number of parts they supply, sorted
in the descending order of the number of parts they supply [5 points]

```
select s.sid, sname, count(c.pid)
from suppliers s, catalog c
where s.sid = c.sid
group by (s.sid)
order by(count(c.pid)) desc
```