**COMSATS University Islamabad, Lahore Campus**

**Department of Electrical and Computer Engineering**

**Assignment – 2**

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| Course Title: | Databases-1 | | | | Course Code: | | CSC 371 | Credit Hours: | 4(3,1) |
| Course Instructor: | Modassir Ishfaq | | | | Programme Name: | | BCE | | |
| Semester: | 4th | Batch: | Fa23 | Section: | B | | Date: | 05-05-2025 | |
| **Time Allowed:** | **90 Minutes** | | | | **Maximum Marks:** | | | **30** | |
| Student’s Name: | Muhammad Ahmad | | | | Reg. No. | CUI/FA23-BCE-113/LHR | | | |
| **Important Instructions / Guidelines:**   * Write all queries (commented with mentioned task numbers) in a single query file * Save the final file as FaXX-BCE-XXX.sql * Email to [modassir.ishfaq@gmail.com](mailto:modassir.ishfaq@gmail.com) | | | | | | | | | |

**Question 1: (30 Marks)**

A database back up file “superhero.bak” file has been provided to you which has an extensive data set implemented based on the schema provided in Fig. 1. This back up file can be restored in MS SQL Server Management Studio installed already. Refer to Fig 1. for the entity-relationship model that will be used in the tasks mentioned later. Analyze the dataset and answer the following questions:

1. **Which superhero weighs the most? (1)**

select

id ,

superhero\_name,

weight\_kg

from

superhero

where

weight\_kg = (

select max(weight\_kg) from superhero

);

**2. Which superhero has the second highest weight? (2)**

select

id ,

superhero\_name,

weight\_kg

from

superhero

where

weight\_kg = (

select max(weight\_kg) from superhero where

weight\_kg < (

select max(weight\_kg) from superhero

)

);

**3. What are the real names of all characters that include 'batman' in their superhero name (2)**

select

full\_name [real name],

superhero\_name [superhero name]

from

superhero

where

superhero\_name like '%batman%'

**4. What is the gender of Bruce Wayne? (3)**

select

s.full\_name [real name],

s.superhero\_name [superhero name],

g.gender

from

superhero s

join

gender g on g.id = s.gender\_id

where

--s.superhero\_name = 'Bruce Wayne'

s.full\_name = 'Bruce Wayne'

**5. What is the average height of all superhero characters included in the database (2)**

select

avg(height\_cm) [avg height(cms)]

from

superhero

-- 6. Provide the count of superhero characters who are taller than average (3)

select

count(\*) as [total count]

from

superhero

where

height\_cm > (

select avg(height\_cm) [avg height(cms)] from superhero

)

**7. Provide superhero’s comic names and real names along with the height of superhero characters who are taller than average, sorted alphabetically (a-z) (4)**

select

superhero\_name [superhero name],

full\_name [real name],

height\_cm

from

superhero

where

height\_cm > (

select avg(height\_cm) [avg height(cms)] from superhero

)

order by

superhero\_name;

**8. Provide the hair color, eye color and skin color of all characters that have 'Superman' in their superhero name**

select

superhero\_name [superhero name],

c1.colour [eye colour],

c2.colour [hair colour],

c3.colour [skin colour]

from

superhero s

join

colour c1 on c1.id = s.eye\_colour\_id

join

colour c2 on c2.id = s.hair\_colour\_id

join

colour c3 on c3.id = s.skin\_colour\_id

where

superhero\_name like '%Superman%'

**9. What are the superpowers of Bruce Wayne?**

select sp.power\_name from superhero s

join hero\_power hp on hp.hero\_id = s.id

join superpower sp on sp.id =hp.power\_id

where --superhero\_name = 'Bruce Wayne'

full\_name = 'Bruce Wayne'

**10. What are the attributes and their values/scores for the superhero named 'batman II' (2)**

--values/scores == ?

select distinct a.attribute\_name from superhero s

join hero\_attribute ha on ha.hero\_id = s.id

join attribute a on a.id = ha.attribute\_id

where superhero\_name like '%batman II%'

**11. Some additional data for the publisher needs to be maintained that includes a complete address including street number, block, city and postal code. Explain the changes would be necessary to be made to the given ERD. Write SQL statements to implement the changes. (4)**

alter table publisher

add street\_number int ,

[block] varchar(20),

city varchar(20),

postal\_code int

select \* from publisher

**12. Another requirement has popped up for publisher data. Make changes so that multiple phone numbers can be maintained for publishers. Explain the changes that would be necessary to be made to the given ERD. Write SQL statements to implement the changes. (4)**

alter table publisher

add phone\_id int UNIQUE

create table phones(

id int primary key,

phone\_number int

)

SELECT \* FROM phones

alter table phone

add constraints fk\_phone\_id foreign key (id) references publisher(phone\_id)