Computing Science assessment task: evidence checklist

You should complete the checklist for task 1 and **either** task 2 **or** task 3.

Task 1 — software design and development

Evidence		Tick
1a	Completed task sheet identifying the missing functional requirements	
1b	Completed task sheet showing your function design	
1c	Printout of your completed program code	
	Printout of the program outputs	
1d(i)	Completed task sheet explaining why output would be incorrect	
1d(ii)	Completed task sheet describing the additional refinements required	
1e	Completed task sheet evaluating the efficiency of your program	

Task 2 — database design and development

Evidence		Tick
2a	Completed task sheet identifying two functional requirements	
2b(i)	Completed diagram showing the cardinality between entities	
2b(ii)	Completed task sheet stating the compound key	
2c	Printout of the implemented SQL statement	
	Printout of the output produced	
2d	Printout of the implemented SQL statement(s)	
	Printout of the output produced	
2e	Printout of the amended SQL statement	
	Printout of the output produced	
2f	Completed task sheet explaining the additional data required	

Task 2: database design and development (part A)

The National Swimming Association (NSA) collects data of multiple events, races, teams, and swimmers. The NSA needs a database to store and manage this data and has approached a database developer to help.

During a meeting with the database developer, the end users provide the following feedback:

- "I would like to see the results of a race displayed by position, from first to last."
- "I need to see the time difference between the winning time and each swimmer's time for a race."
- "I need to find the team reference number for a swimmer."
- "I need to be able to see all the swimmers who finished first, second and third in each race."
- "I need to know the total number of days each city has hosted an event."
- "I need to be able to update the details of events, races and swimmers."

2a The database exists with the appropriate entities and all appropriate attributes.

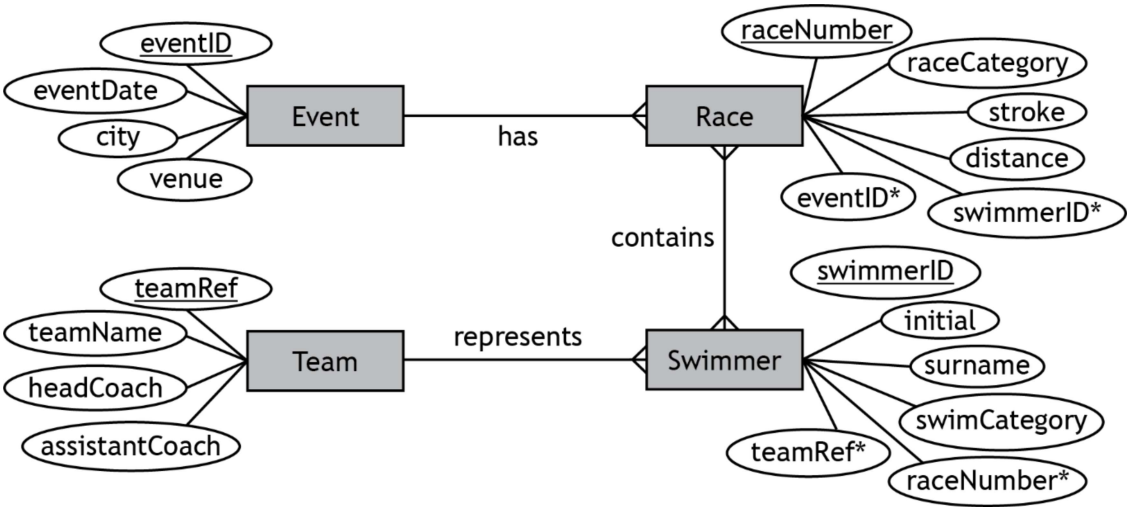
Using the user requirements above, create two functional requirements.

(2 marks)

Functional requirement 1
Functional requirement 2

Candidate name _____ Candidate number _____

An initial entity-relationship diagram for the NSA database is shown below.



The developer advises that a fifth entity called Result must be added to the database to allow users to analyse data about what position each swimmer finished in a race.

2b (i) Complete the diagram below showing the cardinality between the Result entity and the two existing entities.

(1 mark)

(ii) State the compound key for the Result entity.

(1 mark)

- Check your answers carefully, as you cannot return to part A after you hand it in.
- When you are ready, hand part A to your teacher or lecturer and collect part B.

Candidate name _____ Candidate number _____

Task 2: database design and development (part B)

Your teacher or lecturer will provide you with the completed database.

This is a relational database with the following tables.

NSA database

Event	Race	Result	Swimmer	Team
eventID	raceNumber	raceNumber*	swimmerID	teamRef
eventDate	raceCategory	position	initial	teamName
city	stroke	lane	surname	headCoach
venue	distance	swimmerID*	swimCategory	assistantCoach
	eventID*	raceTime	teamRef*	

2c The NSA would like to know the total number of races won by individual swimmers.

Implement the SQL statement to produce the output shown in the table below.

(4 marks)

initial	surname	swimCategory	teamName	Races won
A	Jackson	Intermediate	England	2
C	Jones	Advanced	Wales	1
D	Chaudhry	Intermediate	England	1
F	Adams	Advanced	England	4
I	Arthur	Intermediate	Scotland	2
L	Kelly	Advanced	Northern Ireland	3
M	Abbott	Intermediate	England	2
V	Rose	Advanced	Scotland	3
W	Hudson	Advanced	Wales	2

Print evidence of the implemented SQL statement and the output produced.

2d They want to identify the swimmer who swam in lanes 1 or 8 with the fastest time from any race.

Implement the SQL statement(s) to produce the result below.

(4 marks)

initial	surname	teamName	city	eventDate
L	Bishop	Scotland	Glasgow	06/01/2024

Print evidence of the implemented SQL statement(s) and the output produced.

2e All swimmers who finish in positions 1, 2 and 3 are awarded medals.

The medal total for each team is shown below.

teamName	Total medals won
England	18
Scotland	16
Northern Ireland	14
Wales	12

The following query is designed to count and display the number of medals won by each team.

```
SELECT teamName, COUNT(position) AS [Total medals won]
FROM Result, Swimmer, Team
WHERE Result.swimmerID = Swimmer.swimmerID AND Swimmer.teamRef =
Team.teamRef
GROUP BY teamName;
```

The query to test the above SQL statement is provided with the database. When run, the actual output does not match the expected output.

Amend the query to produce the expected output.

(2 marks)

Print evidence of the amended SQL statement and the output produced.

2f The end-user requirement below could not be met.

"I need to know the total number of days each city has hosted an event."

Explain, with reference to the database structure, what additional data would be required.

(1 mark)

Candidate name _____ Candidate number _____