Government of **Western Australia**
School Curriculum and Standards Authority

ATAR course sample examination one

COMPUTER SCIENCE

SOURCE BOOKLET

2023/71818

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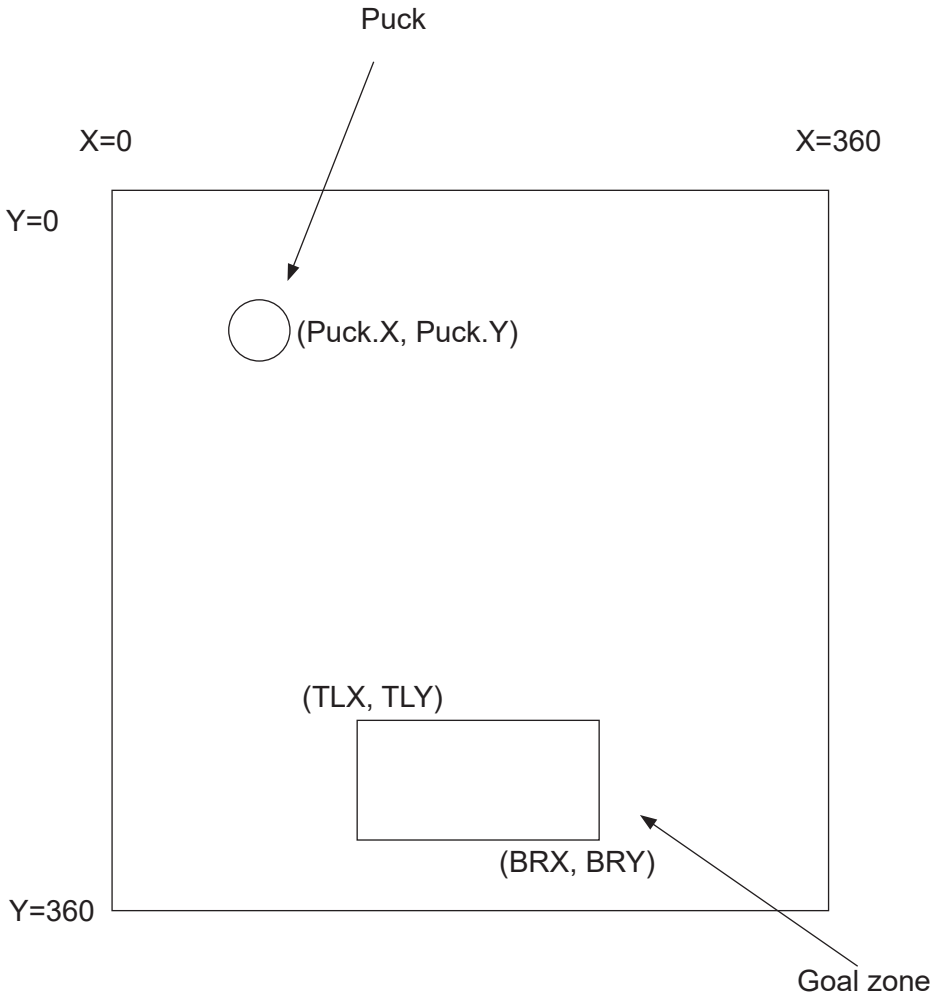
Refer to the information that follows to answer Question 22 in Section Two of the Question/Answer booklet.

Pointed Nostalgia is a game development company specialising in retro style arcade games. The company has hired you to assess and modify their current network installation and assist with some of their software development projects.

Pointed Nostalgia is working on a game called 'Hockey Struck'. In the game, a circular puck can be bounced around a 2D field. When a player succeeds in knocking the centre of the puck into an opponent's rectangular goal zone, they score points.

The goal zone is defined by a pair of coordinates: its top left corner (TLX,TLY) and bottom right corner (BRX, BRY).

An early design of the 'Hockey Strike' game, showing relative coordinates of the field is shown below.



Variables in the ‘Hockey Struke’ game:

Variable	Value
Puck.X	The X ordinate of the centre of the puck
Puck.Y	The Y ordinate of the centre of the puck
TLX	The X ordinate of the top left corner of the goal zone
TLY	The Y ordinate of the top left corner of the goal zone
BRX	The X ordinate of the bottom right corner of the goal zone
BRY	The Y ordinate of the bottom right corner of the goal zone

When a game is over, the player is invited to record a three character string and the high score must then be compared to the top 10 historical scores and, if high enough, the new initials of the player and score are inserted into the list.

New scores which are the same as an existing high score are stored below the existing high score.

The top 10 high scores are stored in order from highest to lowest and are stored in a two-dimensional array: one column to the store initials and one to store the scores.

A sample high score table is provided below.

[[“EMG”,7145],
[“JDI”, 6964],
[“SJW”,5682],
[“GGN”,4800],
[“EXT”,4756],
[“MAP”,3977],
[“AAM”,3773],
[“SJW”,3555],
[“BJM”,3420],
[“DAY”,3292]]

See next page

Refer to the information that follows to answer Question 24 parts (a) and (b) in Section Two of the Question/Answer booklet.

Pointed Nostalgia employs 16 testers to provide quality assurance (QA) for their games. QA testers have been allocated a room in the offices with access to desktop computers for dedicated testing purposes. The current network consists of switches in each of the QA, developer and support offices connecting all the computers and peripherals. There is a server room with a dedicated file server, a development server and hardware firewall. All switches, the firewall and servers, connect back to a single router. This network is connected to the internet with a fibre-to-the-premise connection.

The current IP address range in the office is 192.168.0.0/16 (255.255.0.0).

A list of Pointed Nostalgia's current network hardware assets is provided in the table below.

Location	Hardware type	Quantity
Server room	Fileserver	1
Server room	Development server	1
Server room	Firewall	1
Server room	Router	1
ICT support office	Desktop computer	3
ICT support office	Gigabit network switch	1
ICT Support office	Wireless access point	1
Software development office	Desktop computer	8
Software development office	Gigabit network switch	1
Software development office	Wireless access point	1
QA testing office	Desktop computer	16
QA testing office	Gigabit network switch	1
QA testing office	Wireless access point	1

Pointed Nostalgia have received advice that the performance and security of their current network would be improved by creating four subnets using subnet masks of 255.255.255.0/24 to limit broadcast traffic and restrict access across the network based on function.

ICT support have decided to provide a wireless access point for each subnet (except for the server subnet) to allow employees to bring their own wireless devices to the office.

End of booklet

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303 Sevenoaks Street
CANNINGTON WA 6107