

English for Computer Science

Mohammad Farshi

Department of Computer Science,
Yazd University

1388-1389



Azmoone 1386



Passage 1

If two expressions E_1 and E_2 are linked by the symbol of equality, an equation $E_1 = E_2$ arises. Here E_1 is called the left-hand side, and E_2 the right-hand side, of the equation. The domain of definition of an equation is the intersection of the domains of definition of all the expressions with variables occurring in it.

An equation whose expressions do not contain variables is a proposition in the sense of mathematical logic, which can be true or false; for example, $3 + 2 = 5$ and $3 \times (5 + 2) = 20 + 1$ are true propositions, while $2 + 3 \times 4 = 15$ is a false proposition. But if the expressions contain variables, then the equation is a predicate, for example, the equations $3x = -12$, $4a + 3b = 1$ or $x^2 = \frac{(6x+24)}{3}$. Only after numbers from the domain of definition of the equation are substituted for the variables, the predicate becomes a proposition, which may be true or false.



Passage 1

Every number from the domain of definition of an equation with a single variable which after substitution for the variable makes the equation into a true proposition is called a solution of the equation, and one also says that the number solves or satisfies the equation. If an equation contains two, three, $\dots$, or n variables, then a solution is an ordered pair, triple, $\dots$ or n -tuple of numbers with the following property: if the variables are replaced with due regard to the order by the elements of the ordered pair, triple, $\dots$ or n -tuple then the equation goes over into a true proposition of equality.



Passage 1

16- The predicate will . . . , after the numbers are substituted for the variables.

- | | |
|----------------------------------|---------------------------------|
| 1) be nullified | 2) turn into an equation |
| 3) not be a proposition any more | 4) have the value true or false |

17- An equation is one that always contains . . .

- 1) a symbol with two sides for propositions
- 2) at least two sides linked by a symbol
- 3) at least two expressions along with a symbol
- 4) two expressions appearing in the two sides of a symbol

18- Proposition means an equation having . . . ,

- | | |
|---|-----------------------------------|
| 1) numbers and variables, the values of which can be determined | |
| 2) no variable at all | 3) a logic and a reasonable value |
| 4) variables only | |

Passage 1

16- The predicate will . . . , after the numbers are substituted for the variables.

- | | |
|----------------------------------|---------------------------------|
| 1) be nullified | 2) turn into an equation |
| 3) not be a proposition any more | 4) have the value true or false |

17- An equation is one that always contains

- 1) a symbol with two sides for propositions
- 2) at least two sides linked by a symbol
- 3) at least two expressions along with a symbol
- 4) two expressions appearing in the two sides of a symbol

18- Proposition means an equation having . . . ,

- | | |
|---|-----------------------------------|
| 1) numbers and variables, the values of which can be determined | |
| 2) no variable at all | 3) a logic and a reasonable value |
| 4) variables only | |

Passage 1

16- The predicate will . . . , after the numbers are substituted for the variables.

- | | |
|----------------------------------|---------------------------------|
| 1) be nullified | 2) turn into an equation |
| 3) not be a proposition any more | 4) have the value true or false |

17- An equation is one that always contains . . .

- 1) a symbol with two sides for propositions
- 2) at least two sides linked by a symbol
- 3) at least two expressions along with a symbol
- 4) two expressions appearing in the two sides of a symbol

18- Proposition means an equation having . . . ,

- | | |
|---|-----------------------------------|
| 1) numbers and variables, the values of which can be determined | |
| 2) no variable at all | 3) a logic and a reasonable value |
| 4) variables only | |

Passage 1

19- If an equation contains a number or variables, then a solution for the equation

- 1) turns the equation into a true proposition
- 2) is obtained by substitution for only one of the variables
- 3) is obtained by substitution for all the variables
- 4) turns the equation into a predicate

20- A proposition . . .

- 1) is a predicate having no variable
- 2) has always a true value
- 3) has always a false value
- 4) is proposed for the stations of an equation



Passage 1

19- If an equation contains a number or variables, then a solution for the equation . . .

- 1) turns the equation into a true proposition
- 2) is obtained by substitution for only one of the variables
- 3) is obtained by substitution for all the variables
- 4) turns the equation into a predicate

20- A proposition . . .

- 1) is a predicate having no variable
- 2) has always a true value
- 3) has always a false value
- 4) is proposed for the stations of an equation



Passage 2

Khawarizmi was a mathematician, astronomer and geographer. He was perhaps one of the greatest mathematicians who ever lived, as, in fact he was the founder of several branches and basic concepts of mathematics. He influenced mathematical thought to a greater extent than any other mediaeval writer. His work on algebra was outstanding, as he not only initiated the subject in a systematic form but he also developed it to the extent of giving analytical solutions of linear and quadratic equations, which established him as the founder of Algebra. The very name Algebra has been derived from his famous book Al-Jabr waal-Muqabilah. His arithmetic synthesized Greek and Hindu knowledge also contained his own contribution of fundamental importance to mathematics and science. Thus, he explained the use of zero, a numeral of fundamental importance developed by the Arabs. Similarly, he developed the decimal system so that the overall system of numerals, 'algorithm' or 'algorizm' is named after him.



Passage 2

In addition to introducing the Indian system of numerals (now generally known as Arabic numerals), he developed at length several arithmetical procedures, including operations on fractions. It was through his work that the system of numerals was first introduced to Arabs and later to Europe, through its translations in European languages. He developed in detail trigonometric tables containing the sine functions, which were probably extrapolated to tangent functions by Maslama. He also perfected the geometric representation of conic sections and developed the calculus of two errors, which practically led him to the concept of differentiation. He is also reported to have collaborated in the degree measurements ordered by Mamun al-Rashid which were aimed at measuring the volume and circumference of the earth.



Passage 2

The influence of Khawarizmi on the growth of science, in general, and mathematics, astronomy and geography in particular, is well established in history. Several of his books were readily translated into a number of other languages, and, in fact, constituted the university text-books till the 16th century. His approach was systematic and logical, and not only did he bring together the then prevailing knowledge on various branches of science, particularly mathematics, but also enriched it through his original contribution.



Passage 2

21- Khawarizmi

- 1) explained that the number zero can be used to describe algorithms
- 2) proved that the number zero has a fundamental importance
- 3) invented the number zero
- 4) described the role of zero and its usage in mathematics

22- The derivation ... due to Khawarizmi.

- 1) of the term algorithm but not algebra is
- 2) of the term algebra but not algorithm is
- 3) of the terms algebra and algorithm are both
- 4) of neither the term algebra nor the term algorithm is

23- In history, Khawarizmi is known to have

- 1) established general science
- 2) contributed to the growth of science, mathematics, astronomy and geography
- 3) established mathematics, astronomy and geography
- 4) influenced the growth of general knowledge

Passage 2

21- Khawarizmi

- 1) explained that the number zero can be used to describe algorithms
- 2) proved that the number zero has a fundamental importance
- 3) invented the number zero
- 4) described the role of zero and its usage in mathematics

22- The derivation ... due to Khawarizmi.

- 1) of the term algorithm but not algebra is
- 2) of the term algebra but not algorithm is
- 3) of the terms algebra and algorithm are both
- 4) of neither the term algebra nor the term algorithm is

23- In history, Khawarizmi is known to have

- 1) established general science
- 2) contributed to the growth of science, mathematics, astronomy and geography
- 3) established mathematics, astronomy and geography
- 4) influenced the growth of general knowledge

Passage 2

21- Khawarizmi

- 1) explained that the number zero can be used to describe algorithms
- 2) proved that the number zero has a fundamental importance
- 3) invented the number zero
- 4) described the role of zero and its usage in mathematics

22- The derivation ... due to Khawarizmi.

- 1) of the term algorithm but not algebra is
- 2) of the term algebra but not algorithm is
- 3) of the terms algebra and algorithm are both
- 4) of neither the term algebra nor the term algorithm is

23- In history, Khawarizmi is known to have

- 1) established general science
- 2) contributed to the growth of science, mathematics, astronomy and geography
- 3) established mathematics, astronomy and geography
- 4) influenced the growth of general knowledge

Passage 2

24- Differentiation is a concept which was practically discovered by . . .

- 1) Hindus 2) Arabs 3) Khawarizmi 4) Europeans

25- Khawarizmi is known . . .

- 1) mostly for his pioneer work on knowledge development, in general
2) mostly for his development of numerals and trigonometry
3) for his systematic and logical approach to various fields of science, and his contribution for their enrichment
4) for his criticism of mediaeval scholars



Passage 2

24- Differentiation is a concept which was practically discovered by . . .

- 1) Hindus 2) Arabs 3) Khawarizmi 4) Europeans

25- Khawarizmi is known . . .

- 1) mostly for his pioneer work on knowledge development, in general
2) mostly for his development of numerals and trigonometry
3) for his systematic and logical approach to various fields of science, and his contribution for their enrichment
4) for his criticism of mediaeval scholars



Passage 3

Applications of Data Networks

With the proliferation of computers referred to above, it is not difficult to imagine a growing need for data communication. A brief description of several applications requiring communication will help in understanding the basic problems that arise with data networks. First, there are many applications centered on remote accessing of central storage facilities and of data bases. One common example is that of a local area network in which a number of workstations without disk storage use one or more common file servers to access files. Other examples are the information services and financial services available to personal computer users. More sophisticated examples, requiring many interactions between the remote site and the data base and its associated programs, include remote computerized medical diagnoses and remote computer-aided education. In some of these examples, there is a cost trade-off between maintaining the data base wherever it might be required (and the communication cost of remotely accessing it as required. In other examples, in which the data base is rapidly changing, there is no alternative to communication between the remote sites and the central data base.



Passage 3

Applications of Data Networks

Next, there are many applications involving the remote updating of data bases, perhaps in addition to accessing the data. Airline reservation systems, automatic teller machines. inventory control systems, automated order entry systems, and word processing with a set of geographically distributed authors provide a number of examples. Weather tracking systems and military early warning systems are large-scale examples. In general, for applications of this type, there are many geographically separated points at which data enter the system and often many geographically separated points at which outputs are required. Whether the inputs are processed and stored at one point or processed and stored at many points, there is a need for a network to collect the inputs and disseminate the outputs. In any data base with multiple users there is a problem maintaining consistency (e.g., two users of an airline reservation system might sell the same seat on some flight). In geographically distributed systems these problems are particularly acute because of the networking delays.



Passage 3

26- Networking is needed

- 1) when the data processing and storage is needed at one point or many points
- 2) for collection of inputs only
- 3) for distribution of outputs only
- 4) when the inputs are processed and stored at one point only

27- Many applications are centered on remote accessing of data bases

- 1) and remote accessing of central storage facilities, but not so much on uploading of data bases remotely
- 2) but not on remote accessing of central storage facilities
- 3) but not so much on its updating
- 4) and its remote updating

28- Remote updating or data bases are needed

- 1) mainly in small-scale cases
- 2) mostly in large-scale cases
- 3) both in small-scale and in large-scale cases
- 4) neither in small-scale nor in large-scale cases

Passage 3

26- Networking is needed

- 1) when the data processing and storage is needed at one point or many points
- 2) for collection of inputs only
- 3) for distribution of outputs only
- 4) when the inputs are processed and stored at one point only

27- Many applications are centered on remote accessing of data bases

- 1) and remote accessing of central storage facilities, but not so much on uploading of data bases remotely
- 2) but not on remote accessing of central storage facilities
- 3) but not so much on its updating
- 4) and its remote updating

28- Remote updating or data bases are needed

- 1) mainly in small-scale cases
- 2) mostly in large-scale cases
- 3) both in small-scale and in large-scale cases
- 4) neither in small-scale nor in large-scale cases

Passage 3

26- Networking is needed

- 1) when the data processing and storage is needed at one point or many points
- 2) for collection of inputs only
- 3) for distribution of outputs only
- 4) when the inputs are processed and stored at one point only

27- Many applications are centered on remote accessing of data bases

- 1) and remote accessing of central storage facilities, but not so much on uploading of data bases remotely
- 2) but not on remote accessing of central storage facilities
- 3) but not so much on its updating
- 4) and its remote updating

28- Remote updating or data bases are needed

- 1) mainly in small-scale cases
- 2) mostly in large-scale cases
- 3) both in small-scale and in large-scale cases
- 4) neither in small-scale nor in large-scale cases

Passage 2

29- For data bases which are accessed by many users remotely, maintaining consistency

- 1) is not a problem when networking delays are not present
- 2) is a problem and is sever when networking delays are present
- 3) is not a major issue for geographically distributed systems
- 4) is a minute problem when the systems are distributed diversely because of the networking delays

30- When a data base is changed frequently, a reasonable approach is to

- 1) have multiple sites for the data base
- 2) store the data base at every remote site for its access
- 3) communicate between the remote sites and a central data base
- 4) have alternative communication links to the remote sites

Passage 2

29- For data bases which are accessed by many users remotely, maintaining consistency

- 1) is not a problem when networking delays are not present
- 2) is a problem and is sever when networking delays are present
- 3) is not a major issue for geographically distributed systems
- 4) is a minute problem when the systems are distributed diversely because of the networking delays

30- When a data base is changed frequently, a reasonable approach is to

- 1) have multiple sites for the data base
- 2) store the data base at every remote site for its access
- 3) communicate between the remote sites and a central data base
- 4) have alternative communication links to the remote sites

END.

