Lesson 9: Boolean Logic

1. What is Boolean logic primarily used for in computing?

a) Creating graphics

b) Evaluating conditions in programming

c) Managing computer memory

d) Connecting to the internet

2. What are the possible outcomes of a Boolean expression?

a) True or False

b) Yes or No

c) High or Low

d) 1 or 2

3. Which Boolean operator requires both conditions to be true for the result to be true?

a) OR

b) NOT

c) AND

d) XOR

4. What does the OR operator do in a Boolean expression?

a) Returns true if both conditions are false

b) Returns true if at least one condition is true

c) Returns true if neither condition is true

d) Returns false only if both conditions are true

5. What is the shape of the AND logic gate symbol similar to?

a) The letter O

b) The letter S

c) The letter T

d) The letter D

6. Evaluate the Boolean expression: If A > 0 AND A < 10, and the value of A is 7.

a) True

b) False

c) Neither

d) Both

7. Evaluate the Boolean expression: If A = green OR B = blue, and the value of B is blue.

a) True

b) False

c) Neither

d) Depends on A

8. When using "NOT" in a Boolean expression, what does it do?

a) It increases the number of true options

b) It rejects all options

c) It inverts the value of the statement

d) It combines all available options

9. If an OR gate has two inputs, A and B, under what condition will the output be false?

a) Both A and B are true

b) A is true and B is false

c) A is false and B is true

d) Both A and B are false

10. Which devices would be selected by the Boolean expression "Mobile phones AND Samsung products"?

a) All mobile phones

b) Only Samsung mobile phones

c) All Samsung products

d) Non-Samsung mobile phones

Answers

1.b	2.a	3.c	4.b	5.d	6.a	7.a	8.c	9.d	10.b

Lesson 10: Applying Boolean Logic

1. Logic circuits that perform operations like AND, OR, and NOT are called:

a) Blocks

b) Gates

c) Paths

d) Nodes

2. Which of the following is not a logic gate?

a) AND

b) OR

c) IF

d) NOT

3. What is the output of A AND B when A=1 and B=0?

a) 0

b) 1

c) NOR

d) OR

4. The OR operation in Boolean algebra follows which property?

a) Associative

b) Commutative

c) Distributive

d) All of these

5. What does a truth table show?

a) The design of a logic gate

b) The possible outcomes of Boolean expressions

c) The speed of a circuit

d) The power consumption of sensors

6. What does the AND operator require for the output to be true?

a) At least one input is true

b) Both inputs are true

c) Neither input is true

d) Only one input is false

7. Truth Table for Q = A AND (NOT B) is given below. What are the missing values in truth table?

A	B	Q
0	0	?
0	1	?
1	0	?
1	1	?

a) 0, 0, 1, 0

b) 0, 1, 0, 1

c) 1, 0, 1, 1

d) 1, 1, 0, 0

8. Truth Table for Q = A OR (B AND C) is given below. What are the missing values in truth table?

A	B	C	Q
0	0	0	?
0	0	1	?
0	1	0	?
0	1	1	?

a) 0, 0, 0, 1

b) 0, 0, 1, 0

c) 0, 1, 0, 0

d) 0, 1, 1, 1

9. In a greenhouse, if the soil is too wet AND it is too hot, what action might be taken?

a) Turn on the heater

b) Open the air vents and use underground heating

c) Close the blinds

d) Turn off the irrigation system

10. For a truth table of an OR gate with three inputs (A, B, C), what is the output Q when A=0, B=0, C=1?

a) True

b) False

c) Depends on other conditions

d) Neither true nor false

Answers

1.b	2.c	3.a	4.d	5.b	6.b	7.a	8.a	9.d	10.a

Lesson 11: Binary Numbers and Calculations

1. What is the base of the binary number system?

a) 10

b) 8

c) 2

d) 16

2. In binary addition, what is the result of 1 + 0?

a) 0

b) 1

c) 2

d) 10

3. What is the denary equivalent of the binary number 11001?

a) 9

b) 19

c) 25

d) 27

4. What is the binary representation of decimal 17?

a) 10000

b) 10011

c) 10010

d) 10001

5. The binary sum of 1101 + 1011 is:

a) 10100

b) 11000

c) 11100

d) 11010

6. The binary form of decimal 63 is:

a) 101011

b) 111000

c) 110111

d) 111111

7. What is the binary representation of the decimal number 35?

a) 100011

b) 100100

c) 101010

d) 100101

8. To subtract binary numbers, the first step is:

a) Start from the leftmost column

b) Start from the rightmost column

c) Convert to decimal first

d) Subtraction not possible in binary

9. What is always true about the rightmost digit of an odd binary number?

a) Always 0

b) Always 1

c) It varies

d) Cannot be determined

10. In Binary addition, what should you do when the sum in a column exceeds 1 (i.e., it becomes 2)?

a) Carry over 1 to the next column

b) Carry over 0 to the next column

c) Carry over 2 to the next column

d) Don't carry over anything

Answers

1.c	2.b	3.c	4.d	5.b	6.d	7.a	8.b	9.b	10.a

Lesson 12: Base Number System

1. The base of the octal number system is:

a) 2

b) 8

c) 10

d) 16

2. The hexadecimal form of decimal 15 is:

a) F

b) B

c) C

d) D

3. The denary equivalent of binary 1011 is:

a) 5

b) 9

c) 11

d) 13

4. How many digits are used in the octal number system?

a) 6

b) 8

c) 10

d) 16

5. The denary value of binary 1101 is:

a) 5

b) 7

c) 13

d) 15

6. The binary representation of decimal 42 is:

a) 001010

b) 101010

c) 110100

d) 111010

7. The hexadecimal representation of decimal 255 is:

a) FF

b) 1FF

c) 100

d) 255

8. The sum of binary numbers 1101 + 1010 is:

a) 1111

b) 10101

c) 10111

d) 10010

9. The octal representation of decimal 50 is:

a) 32

b) 40

c) 44

d) 62

10. The hexadecimal representation of decimal 10 is:

a) A

b) B

c) C

d) D

Answers

1.b	2.a	3.c	4.b	5.c	6.b	7.a	8.c	9.d	10.a

Lesson 13: Converting Base Numbers 1

1. Convert the hexadecimal number 3A to decimal.

a) 58

b) 52

c) 37

d) 42

2. What base is represented by the subscript in 101010_2?

a) Octal

b) Binary

c) Decimal

d) Hexadecimal

3. The binary representation of decimal 13 is:

a) 1100

b) 1110

c) 1011

d) 1101

4. Convert decimal 73 to binary.

a) 1001000

b) 101101

c) 1001001

d) 111001

5. The hexadecimal representation of decimal 15 is:

a) A

b) B

c) C

d) F

6.   Convert decimal 57 to binary.

a) 111000

b) 110110

c) 111001

d) 110111

7.   Convert binary 110110 to decimal.

a) 43

b) 52

c) 54

d) 49

8.   The decimal equivalent of binary 101011 is:

a) 16

b) 43

c) 26

d) 31

9.   The octal representation of decimal 45 is:

a) 36

b) 41

c) 55

d) 64

10. In binary 111001, which column represents the value 4?

a) 1st from the right

b) 2nd from the right

c) 3rd from the right

d) 4th from the right

Answers

1.a	2.b	3.d	4.c	5.d	6.c	7.c	8.b	9.c	10.c

Lesson 14: Converting Base Numbers 2

1. To convert 765 into octal, we start from which base?

a) Binary

b) Octal

c) Hexadecimal

d) Decimal

2. The octal equivalent of decimal 765 is:

a) 765

b) 1375

c) 1765

d) 7650

3. The number 631_8 belongs to which base system?

a) Octal

b) Hexadecimal

c) Binary

d) Decimal

4. To convert 545 into hexadecimal, we use which base system?

a) Octal

b) Binary

c) Hexadecimal

d) Decimal

5. The decimal equivalent of hexadecimal A3D is:

a) 4037

b) 2621

c) 2779

d) 156

6. In hexadecimal, the letter F represents:

a) 14

b) 15

c) 16

d) 17

7. The octal equivalent of decimal 63 is:

a) 63

b) 111

c) 77

d) 57

8. The decimal equivalent of octal 346 is:

a) 346

b) 230

c) 262

d) 208

9. How many groups of 64 are there in octal number 5346?

a) 5

b) 4

c) 3

d) 6

10. How many groups of 16 are there in hexadecimal FFE?

a) 255

b) 254

c) 256

d) 257

Answers

1.d	2.b	3.a	4.d	5.b	6.b	7.c	8.b	9.c	10.a

Lesson 1: Programming: Lists and Arrays

1. What is the primary purpose of a list in programming?

a) To store only numeric data

b) To execute functions

c) To store a sequence of elements

d) To create dynamic variables

2. What is the first element index in a list or array?

a) 1

b) 10

c) -1

d) 0

3. What does the Numbers.sort() method do in Python?

a) Reverses the list

b) Arranges the list in ascending order

c) Deletes elements from the list

d) Adds new elements to the list

4. Which of the following correctly declares an empty list in Python?

a) my_list = []

b) my_list = [0, 0, 0]

c) my_list = [none]

d) my_list = ()

5. Which method removes the last element from a list?

a) remove()

b) pop()

c) delete()

d) erase()

6. What is a string in programming?

a) A sequence of characters

b) A sequence of numbers

c) A type of loop

d) A fixed-size array

7. What is the output of this code?

a) [5, 2, 8, 1, 9]

b) [1, 2, 5, 8, 9]

c) [9, 8, 5, 2, 1]

d) none

```
Code
nums = [5, 2, 8, 1, 9]
nums.sort()
print(nums)
```

8. What does the len() function return when applied to a list?

a) Total number of elements

b) Sum of all elements

c) Average of elements

d) Largest element

9. What will happen if you run the following Python code with a list MyNumbers = [10, 20, 30]?

a) 20

b) 10

c) 30

d) Error

```
Code
MyNumbers.reverse()
print(MyNumbers[1])
```

10. Which of the following will give output as [23,2,9,75]? If list1 = [6,23,3,2,0,9,8,75]

a) print(list1[1:7:2])

b) print(list1[0:7:2])

c) print(list1[1:8:2])

d) print(list1[0:8:2])

Answers

1.c	2.d	3.b	4.a	5.b	6.a	7.b	8.a	9.a	10.c

Lesson 2: User Interfaces

1. What does GUI stand for?

a) Graphical Unit Interface

b) Graphical User Interface

c) General User Interface

d) General Unit Interface

2. In UI/UX design, UI stands for:

a) User Identifier

b) User Interaction

c) User Interface

d) User Insight

3. What is the main goal when designing a user interface?

a) To make it look complex

b) To minimize the number of inputs

c) To use as many colors as possible

d) To meet the needs of the user

4. What is meant by "lower case" in a user interface?

a) Capital letters only

b) Small letters with no capitalization

c) A mix of capital and small letters

d) Letters with special characters

5. Which is a key principle of good user interface design?

a) Complexity

b) Clutter

c) Consistency

d) Chaos

6. Responsive design in user interfaces means:

a) Interface that responds with humor

b) Interface that responds to voice commands

c) Interface that adapts to different screen sizes and devices

d) Interface that changes colors with mood

7. Why might a user interface with unclear instructions cause problems?

a) It makes the program run slower

b) Users may enter data in the wrong format

c) It increases the program's size

d) It prevents the program from saving data

8. A user interface has a prompt: "Select: A for height in cm, B for height in meters, C for height in feet and inches." What is the benefit of this design?

a) It allows the program to run faster

b) It ensures users input height in a consistent, expected format

c) It reduces the need for user input

d) It makes the interface look more colorful

9. Which is an example of a user interface element?

a) Algorithm

b) Database

c) Dropdown menu

d) Loop

10. Which of the following is a role in the UI design process?

a) UX designer

b) Database administrator

c) System administrator

d) Network engineer

Answers

1.b	2.c	3.d	4.b	5.c	6.c	7.b	8.b	9.c	10.a

Lesson 3: Programming: Good Practice

1. What is typically considered good practice in programming?

a) Writing code without comments

b) Ignoring naming conventions

c) Making code as complex as possible

d) Using clear comments, following conventions, keeping code simple

2. What is a benefit of using meaningful variable names?

a) They make the code easier to understand

b) They make the code run faster

c) They reduce the size of the program

d) They prevent all bugs

3. What does indentation in code help with?

a) Increasing program speed

b) Marking the start and end of control structures

c) Adding comments to the code

d) Reducing the number of variables

4. What does code portability mean?

a) Ability to transfer code between languages

b) Code that works only on one computer

c) Code runs on different systems without modification

d) Process of documenting code

5. How can you stop a running Python program in Terminal?

a) Close the terminal

b) Press Enter

c) Press CTRL+C

d) Double-click the Python file

6. Why is reusability a good practice?

a) Increases costs

b) Slows development

c) Reuse of tested components saves time

d) Leads to complex code

7. What is a benefit of following consistent coding standards across a development team?

a) It allows the team to use different programming languages

b) It increases efficiency and reduces errors

c) It eliminates the need for documentation

d) It makes the code more complex

8. What is the advantage of using CamelCase for variable names?

a) Makes code harder to read

b) Saves memory

c) Allows spaces in names

d) Enhances readability and separates words

9. When should test cases be planned?

a) After coding is complete

b) During design and coding phases

c) After deployment

d) Only when errors appear

10. What is the purpose of code comments?

a) To make the code look colorful

b) To help developers understand the code

c) To execute the program

d) To store data in the program

Answers

1.d	2.a	3.b	4.c	5.c	6.c	7.b	8.d	9.b	10.b

Lesson 4: Programming: Data Structure

1. What is a data structure?

a) A way to format data for printing

b) A way to organize data for efficient access

c) A type of programming language

d) A method to display data on the screen

2. What does LIFO stand for in the context of a stack?

a) Last-In-First-Out

b) First-In-Last-Out

c) Last-In-Fast-Output

d) First-In-First-Out

3. Which operation removes an element from the front of a queue?

a) Push

b) Pop

c) EnQueue

d) DeQueue

4. Which operation is used to access an element in an array?

a) Sorting

b) Indexing

c) Looping

d) Deleting

5. What happens when you try to perform a Pop operation on an empty stack?

a) Overflow condition

b) Underflow condition

c) The stack grows

d) The stack sorts itself

6. What is the correct way to create an empty list in Python?

a) {}

b) ()

c) list()

d) new list()

7. What will this code output?

a) [1, 2, 3]

b) [4, 3, 2, 1]

c) [1, 2, 3, 4]

d) 4

```
nums = [1, 2, 3]
nums.append(4)
print(nums)
```

8. Rearrange the code segments to correctly calculate the sum of two numbers:

a) 3, 2, 1, 4

b) 2, 3, 4, 1

c) 3, 2, 4, 1

d) 2, 3, 1, 4

```
1   print(sum)
2   num1 = 5
3   num2 = 7
4   sum = num1 + num2
```

9. In a stack with elements [6, 19, 33] (where 33 is the top), what is the result after performing a Pop operation?

a) [6, 19]

b) [6, 33]

c) [19, 33]

d) [6, 19, 33]

10. What is the result of performing an EnQueue operation on a full queue?

a) The queue shrinks

b) An Empty Queue Exception occurs

c) The element is added to the front

d) A Full Queue Exception occurs

Answers

1.b	2.a	3.d	4.b	5.b	6.c	7.c	8.b	9.a	10.d

Lesson 5: Modular Code

1. What is the primary goal of modular code?

a) To increase complexity

b) To create monolithic programs

c) To improve organization and maintainability

d) To make debugging harder

2. What is a module in programming?

a) A separate component used in different programs

b) A full program that cannot be reused

c) A type of variable

d) A looping structure

3. Where is a function definition written?

a) Inside the main program only

b) Separate from the main program

c) Only in the output section

d) Inside a loop

4. How does modular code improve maintainability?

a) Makes code harder to understand

b) Encourages duplication

c) Makes debugging easier

d) Prevents testing

5. Which characteristic best describes a module in modular programming?

a) It performs a specific function or task

b) It contains a large monolithic block of code

c) It is always written in assembly language

d) It is not reusable in different programs

6. Why does modular programming make debugging easier?

a) Fewer variables are used

b) Small parts are easier to test

c) No need for functions

d) All code is in one block

7. What is the role of a "Function call" in a program?

a) It defines a reusable code block.

b) It passes values into a function.

c) It creates a function that can be reused.

d) It activates a function in the main program.

8. How does modular programming support teamwork?

a) Everyone works on the same function

b) Different people can work on different parts

c) Programmers cannot test their code

d) All code must be written together

9. A function calculates the average of numbers. How can it help other projects?

a) It can only be used once

b) It can be reused in other programs

c) It must be rewritten every time

d) It cannot be tested separately

10. Which practice supports modular code?

a) Writing everything in one large function

b) Using global variables everywhere

c) Breaking tasks into smaller functions/classes

d) Avoiding functions

Answers

1.c	2.a	3.b	4.c	5.a	6.b	7.d	8.b	9.b	10.c

Lesson 6: Testing and Improving Programs 1

1. Which statement is often used to display debugging info?

a) print()

b) input()

c) delete()

d) compile()

2. What is the primary purpose of debugging tools?

a) To write code quickly

b) To make code complex

c) To inspect and correct program execution

d) To remove user input

3. Which tool lets a programmer step through code line by line?

a) Break

b) Watch

c) Step

d) Execute

4. What is the main advantage of using debugging tools when inspecting code with loops?

a) Faster program execution

b) Efficient identification of loop conditions

c) Enhanced code readability

d) Better understanding of function calls

5. Which is a common debugging tool?

a) Word processor

b) Spreadsheet

c) Debugger

d) Web browser

6. Which of the following shows a bug in code?

a) Code compiles fine

b) Program gives unexpected results

c) Code has comments

d) Program runs very fast

7. Debugging mainly improves which programming practice?

a) Code organization

b) Code complexity

c) Code optimization

d) Code correctness

8. How do debugging tools improve maintainability?

a) By making code complex

b) By removing comments

c) By allowing efficient error fixing

d) By making code less organized

9. What happens when non-functional testing is successfully applied to an application?

a) The application's user interface is improved

b) The application becomes robust and resistant to vulnerabilities

c) The application's code is rewritten

d) The application's functionality is reduced

10. In functional testing, how does a programmer construct test data?

a) By analyzing the program's source code for errors

b) By creating data based on the program's specifications

c) By measuring the program's execution speed

d) By modifying the program's user interface

Answers

1.a	2.c	3.c	4.b	5.c	6.b	7.d	8.c	9.b	10.b

Lesson 7: Testing and Improving Programs 2

1. What does functional testing mainly focus on?

a) Code readability

b) Code efficiency

c) Design specifications

d) Code complexity

2. What type of testing is functional testing considered?

a) White box testing

b) Black box testing

c) Automated testing

d) Security testing

3. When should functional testing be conducted?

a) After non-functional testing

b) Before non-functional testing

c) At the same time as non-functional testing

d) Only during debugging

4. Which testing type checks acceptable input values and correct calculations?

a) Functional testing

b) Operational testing

c) Syntax testing

d) Efficiency testing

5. What is tested in operational testing?

a) User interface

b) Calculations

c) Scalability

d) Reliability

6. In operational testing, how many times should each calculation be tested with different values?

a) Once

b) At least twice

c) Three times

d) Five times

7. What is the main benefit of using test plans in operational testing?

a) Faster execution

b) No need for comments

c) Step-by-step analysis of code behaviour

d) Organized testing and result recording

8. How does functional testing differ from non-functional testing?

a) Tests user expectations vs. requirements

b) Uses white box vs. black box

c) Focuses on functionality vs. performance

d) Performed after vs. before

9. What should a tester do if a functional test fails?

a) Modify specifications

b) Debug the program

c) Test performance

d) Ignore the result

10. When evaluating program output in functional testing, what is the goal?

a) Assess complexity

b) Ensure fast execution

c) Verify expected behavior

d) Identify syntax errors

Answers

1.c	2.b	3.b	4.a	5.d	6.b	7.d	8.c	9.b	10.c

Lesson 8: Testing and Improving Programs 3

1. Which errors are the focus when testing for logic issues?

a) Syntax errors

b) Runtime errors

c) Logic errors

d) Compilation errors

2. What is the main purpose of testing for logic errors?

a) Ensure program runs error-free

b) Find mistakes in reasoning or logic

c) Optimize program speed

d) Improve code style

3. Why are syntactic errors easy to fix?

a) They produce incorrect outputs

b) The compiler identifies them

c) They involve program logic

d) They occur during execution

4. What defines a logical error?

a) Syntax rule violation

b) Incorrect program output

c) Missing semicolon

d) Multiple variable declarations

5. Which action is NOT useful for spotting logic errors?

a) Code review

b) Testing with varied inputs

c) Peer debugging

d) Ignoring unexpected outputs

6. Which error type does not produce an error message?

a) Syntactic error

b) Semantic error

c) Logical error

d) Compilation error

7. When do semantic errors typically become noticeable?

a) During compilation

b) During program execution

c) During code writing

d) During debugging

8. Which of the following is a logic error?

a) Missing semicolon

b) Divide by zero

c) Wrong variable spelling

d) Adding instead of subtracting

9. What is a common way to test for logic errors?

a) Automated testing tools

b) Running program with no input

c) Writing entire code in one go

d) Avoiding testing

10. A programmer forgets a break statement in switch case, causing unexpected behavior. What error is this?

a) Logical error

b) Syntactic error

c) Semantic error

d) Runtime error

Answers

1.c	2.b	3.b	4.b	5.d	6.c	7.b	8.d	9.a	10.a

Lesson 17: Spreadsheet Modelling

1. What is a spreadsheet model used for?

a) Analyzing decision problems

b) Writing code

c) Designing websites

d) Storing images

2. What is the primary goal of a cash flow forecast?

a) Always keep balance negative

b) Maintain a positive closing balance

c) Increase number of expenses

d) Avoid projecting sales

3. What does the opening balance represent?

a) Monthly expenses

b) Profit for the month

c) Money left at month end

d) Funds available at the start

4. In spreadsheet modeling, a negative closing balance means:

a) Business is profitable

b) Business has no revenue

c) Business has financial difficulties

d) Expenses are exaggerated

5. What does the "one row, one formula" rule ensure?

a) Consistent formulas

b) Multiple formulas per row

c) Random data entry

d) Hidden calculations

6. What does a project planning spreadsheet model typically include?

a) Social media metrics

b) Critical path schedules

c) Email templates

d) User login details

7. Why should inputs, calculations, and results be separated in a spreadsheet model?

a) To reduce file size

b) To improve clarity

c) To hide data

d) To speed up calculations

8. How can a business ensure a positive closing balance?

a) Increase expenses

b) Reduce revenue

c) Manage expenses and revenue effectively

d) Stop tracking finances

9. What type of calculations are used in a risk analysis spreadsheet model?

a) File compression

b) Password encryption

c) Image processing

d) Probability calculations

10. A profit and loss spreadsheet model shows a company's expenses exceed its income. What does this indicate?

a) Net loss

b) Positive cash flow

c) Forecast error

d) High KPIs

Answers

1.a	2.b	3.d	4.c	5.a	6.b	7.b	8.c	9.d	10.a

Lesson 15: Computer Models and Simulations 1

1. What does a simulation do?

a) Deletes system data

b) Replaces real systems

c) Modifies real systems

d) Mimics real systems

2. What is a key advantage of simulations?

a) High cost

b) Slow processing

c) Fixed variables

d) Low risk

3. A simulated environment is designed to offer:

a) Physical challenges

b) Real-world consequences

c) Controlled experience

d) High risk

4. In a simulation, variables are:

a) Factors that cannot be changed

b) Physical objects

c) Elements adjusted for different outcomes

d) Fixed components

5. What does "interactive" mean in a simulation?

a) Lacks engagement

b) Users can engage and influence it

c) Passive experience

d) Complex interface

6. Why are simulations repeatable?

a) They require physical systems

b) They allow exact parameter control

c) They use random parameters

d) They are always low-cost

7. What is a limitation of simulations?

a) Easy development

b) Low accuracy

c) Time-consuming creation

d) No variable control

8. How does a flight simulator benefit pilot training?

a) Reduces flight time

b) Modifies aircraft design

c) Tests real aircraft

d) Simulates turbulence safely

9. Why might simulation results be hard to interpret?

a) Lack of variables

b) Fixed outcomes

c) Complex model outputs

d) Simple system designs

10. Which device provides immersive experiences in VR simulations?

a) Physical models

b) Data gloves

c) Textbooks

d) Printed diagrams

Answers

1.d	2.d	3.c	4.c	5.b	6.b	7.c	8.d	9.c	10.b

Lesson 16: Computer Models and Simulations 2

1. What is the primary factor that goes into or out of a closed system?

a) Matter

b) Energy

c) Feedback

d) Environment

2. Which is NOT a characteristic of a closed system?

a) Accuracy and reliability

b) No feedback element

c) Interaction with the environment

d) Energy input/output only

3. Which system is self-correcting?

a) Tumble dryer

b) Washing machine

c) Iron

d) Central heating system

4. Which system requires checking and maintenance to stay accurate?

a) Hair dryer

b) Central heating system

c) Tumble dryer

d) Pond

5. Why does an open system not know when to stop?

a) Lacks a feedback element

b) Requires maintenance

c) It is self-correcting

d) Has a sensor

6. Key characteristic of open systems:

a) Self-correcting

b) Always accurate

c) No interaction with environment

d) Completes process regardless of external factors

7. What makes medical simulation training effective?

a) Uses real patients

b) Allows safe practice

c) Increases risks

d) Limits skill learning

8. What is a limitation of aviation simulators compared to real flights?

a) Cannot replicate stress levels

b) Lack aircraft visuals

c) Prevent skill training

d) Increase operational costs

9. Why is a car air conditioning system considered closed?

a) It has no interaction with the environment.

b) It has a feedback element to maintain temperature.

c) It continues to operate regardless of external factors.

d) It is unreliable.

10. Primary difference between open and closed systems:

a) Open systems require feedback

b) Closed systems complete processes regardless of external factors

c) Closed systems interact with environment

d) Open systems lack feedback

Answers

1.b	2.c	3.d	4.b	5.a	6.d	7.b	8.a	9.b	10.d

Lesson 18: Expert Systems

1. How do expert systems work?

a) Using knowledge base and decision engine

b) Understanding human feelings

c) Doing complex math

d) Making paintings

2. Which is an advantage of expert systems?

a) They have emotions

b) They can be creative

c) Available 24/7

d) Need regular training

3. Which is NOT an advantage of expert systems?

a) Need a lot of information

b) Can think creatively

c) Struggle with unclear information

d) Don't need regular training

4. How do expert systems deal with unclear information?

a) Handle well and give accurate answers

b) Ignore it

c) May struggle with accuracy

d) Make own interpretations

5. What is "triage" in expert systems?

a) Deciding seriousness of a patient's condition

b) Creating artwork

c) Designing games

d) Training experts

6. How much trust should users have in an online symptom checker?

a) Trust completely

b) Don't trust at all

c) Trust somewhat, consult professional if needed

d) Trust only if free

7. What is the user interface in an expert system?

a) A data storage unit

b) A communication tool

c) A reasoning mechanism

d) A rule generator

8. How does an expert system differ from a regular program?

a) Uses random data

b) Mimics human expertise

c) Avoids user interfaces

d) Stores no data

9. In a medical expert system, what might the knowledge base contain?

a) Game strategies

b) Diagnostic rules

c) Flight schedules

d) Traffic patterns

10. Should health organizations replace human staff with expert systems?

a) Yes, always better

b) No, can't provide emotional support

c) Maybe, depending on availability

d) No, but can work together with humans

Answers

1.a	2.c	3.b	4.c	5.a	6.c	7.b	8.b	9.b	10.d

Lesson 19: Training Simulations and Virtual Reality

1. What is virtual reality (VR)?

a) A simulated 3D environment

b) A real-world overlay

c) A coding platform

d) A data storage system

2. What does augmented reality (AR) do?

a) Replaces reality entirely

b) Simulates physical objects

c) Stores virtual data

d) Enhances real-world visuals

3. How does VR benefit healthcare?

a) Manages patient records

b) Enables surgical practice

c) Designs hospital layouts

d) Tracks medical inventory

4. When using VR for training, what can employees do?

a) Play games for fun

b) Only watch videos

c) Practice tasks and test responses

d) Can't do anything

5. One potential disadvantage of simulations in training:

a) Make training dangerous

b) Some situations hard to simulate

c) Always expensive

d) Eliminate need for human trainers

6. Primary purpose of virtual training environments:

a) Make training expensive

b) Put trainees at risk

c) Provide a safe way to practice tasks

d) Replace human trainers

7. How might VR change future training?

a) No impact

b) Less realistic

c) Enable more immersive and realistic experiences

d) Replace all traditional training

8. What limitation does AR have compared to VR in educational settings?

a) Requires expensive headsets

b) Lacks immersive environments

c) Cannot use smartphones

d) Avoids real-world visuals

9. What is an example of an AR application?

a) Pokémon Go

b) Surgical training

c) VR museum tour

d) Flight simulator

10. How have simulations changed with advancing technology?

a) More realistic and interactive

b) Less realistic

c) Less interactive

d) No longer used for training

Answers

1.a	2.d	3.b	4.c	5.b	6.c	7.c	8.b	9.a	10.a

Lesson 20: Using Simulation in Research and Development

1. What does "3D" mean in research and development?

a) Three Delicious

b) Three Dimensions

c) Three Dangers

d) Three Designs

2. Why do researchers use simulation in R&D?

a) To replace real-life experiments

b) To make virtual friends

c) To create video games

d) To bake cookies

3. Main job of a prototype in R&D:

a) Simulate a rocket launch

b) Be the final product

c) Working model for testing

d) Play music

4. One benefit of using simulation early in R&D:

a) Makes products invisible

b) Replaces prototypes entirely

c) Speeds up testing and design

d) Predicts the weather

5. Purpose of creating prosthetic limbs using 3D printing:

a) Make them taste better

b) Create virtual limbs

c) Produce artificial limbs efficiently

d) Build houses

6. Role of 3D printing in simulating products for R&D:

a) Replaces simulation entirely

b) Creates physical models for testing

c) Markets products to consumers

d) Grows virtual flowers

7. Term for using a 3D printer to create physical prototypes:

a) 3D Modeling

b) Additive Manufacturing

c) 3D Simulation

d) Magic Printing

8. Main goal of simulation in aerospace R&D:

a) Replace real aircraft with virtual ones

b) Create virtual passengers

c) Eliminate prototypes

d) Reduce cost of aircraft production

9. How does simulation help optimize agricultural R&D?

a) Predict stock market

b) Create virtual farms

c) Make music

d) Predict crop yields

10. Key benefit of 3D printing for prototyping in R&D:

a) Makes prototypes disappear

b) Allows rapid customization

c) Grows virtual flowers

d) Replaces prototypes with real products

Answers

1.b	2.a	3.c	4.c	5.c	6.b	7.b	8.d	9.d	10.b

Lesson 21: Creating Computer Models

1. Which of the following is a real-world application of computer simulations?

a) Building virtual computers

b) Playing video games

c) Creating software programs

d) Predicting stock market trends

2. What is the essential function of an algorithm?

a) Playing video games

b) Solving complex problems

c) Assembling physical computers

d) Simulating real-world processes

3. Which software/computer program is commonly used for computer modelling?

a) Blender

b) MS Word

c) Adobe Photoshop

d) Google Chrome

4. Which term describes a computer model that represents the physical components of a computer?

a) Simulation

b) Algorithm

c) Hardware model

d) Software program

5. In computing, what is an "algorithm"?

a) A computer model

b) A set of instructions for solving a problem

c) A physical hardware component

d) A type of simulation software

6.   What is the primary purpose of a computer model?

a) Playing video games

b) Simulating real-world processes

c) Writing code

d) Creating hardware components

7.   Which file format is commonly used to save 3D models?

a) .docx

b) .stl

c) .pdf

d) .mp3

8.   Which of the following is NOT a typical use of computer models?

a) Predicting weather patterns

b) Simulating flight conditions

c) Editing text documents

d) Designing architectural structures

9.   PC building simulation software typically allows users to:

a) Assemble virtual computers

b) Write code

c) Play video games

d) Create hardware components

10. What is the primary goal of a computer simulation?

a) Building physical hardware components

b) Testing computer algorithms

c) Imitating a real-world process or system

d) Creating software applications

Answers

1.d	2.b	3.a	4.c	5.b	6.b	7.b	8.c	9.a	10.c

Lesson 22: Data Validation

1. What is the main purpose of data validation in a spreadsheet?

a) To make the spreadsheet look colorful

b) To ensure data accuracy and correctness

c) To increase the complexity of the spreadsheet

d) To prevent data from being displayed

2. What does "input validation" mean in the context of spreadsheets?

a) Adding more data to a spreadsheet

b) Making the spreadsheet visually appealing

c) Ensuring that entered data meets specific criteria

d) Changing the appearance of the spreadsheet

3. What is the role of parentheses in the BODMAS rule?

a) They indicate the beginning and end of the formula.

b) They denote multiplication.

c) They signify subtraction.

d) They have no specific role in BODMAS.

4. What does a drop-down list in a spreadsheet do?

a) Calculates totals

b) Limits input choices

c) Verifies data accuracy

d) Formats text

5. Which data validation restricts times?

a) Numeric range

b) Time frame

c) Email format

d) Check boxes

6. What is the primary role of an error alert in data validation?

a) To hide specific data in the spreadsheet

b) To provide additional instructions to the user

c) To slow down the spreadsheet calculations

d) To display an error message when incorrect data is entered

7. Which of the following is an example of a data validation rule?

a) Texts must be bold

b) Email addresses must contain "@" symbol

c) Images must be in JPG format

d) Links must be underlined

8. Which of the following is a common aspect that can be validated in a spreadsheet?

a) The physical size of the spreadsheet

b) The format in which data is presented

c) The category of data, such as numbers, text, or dates

d) The color of the spreadsheet cells

9. What type of validation ensures that an input conforms to a particular data type?

a) Format validation

b) Range validation

c) Presence validation

d) Type validation

10. In data validation, what is a "data type"?

a) The physical size of the spreadsheet

b) The format in which data is presented

c) The category to which data belongs, such as numbers, text, or dates

d) The color of the spreadsheet cells

Answers

1.b	2.c	3.a	4.b	5.b	6.d	7.b	8.c	9.d	10.c

Lesson 23: Evaluating Computer Models

1. What does the "S" in SMART objectives stand for?

a) Simple

b) Specific

c) Secure

d) Standard

2. What does a measurable objective include?

a) A vague goal

b) A percentage or number

c) A color scheme

d) A user interface

3. Why is it important to set SMART objectives for a project?

a) To make the project more complex

b) To ensure the project stays on schedule

c) To provide clear criteria for success

d) To allocate more resources to the project

4. When assessing a model or simulation, what should you consider to determine if it meets its objectives?

a) The color scheme used

b) Whether it's easy to find on the internet

c) How well it explains complex concepts

d) The objectives set at the beginning

5. What does a loan calculator tool primarily help users with?

a) Calculating monthly mortgage payments

b) Calculating savings account interest

c) Calculating loan repayments

d) Calculating retirement income

6. What aspect of a simulation should you consider when determining if it provides a basic understanding?

a) The font size used

b) The level of interactivity

c) The number of colors used

d) The length of the simulation

7. How can you assess whether a simulation is easy to use?

a) By counting the number of pages, it has

b) By examining the font style, it uses

c) By testing user navigation and interaction

d) By checking the background colour

8. When should SMART objectives be set in a project?

a) During the project review phase

b) After the project is completed

c) At the beginning of the project

d) When the project is halfway finished

9. What is the primary purpose of setting measurable objectives in a project?

a) To make the project more complex

b) To allow for vague project outcomes

c) To track progress and success

d) To impress stakeholders

10. Why might a SMART objective fail if it lacks a timely component?

a) No clear deadline

b) Missing resources

c) Vague goals

d) Complex code

Answers

1.b	2.b	3.c	4.d	5.c	6.b	7.c	8.c	9.c	10.a

Lesson 24: Improving Computer Models

1. Why is readability of text important in a simulation?

a) To add more colors

b) To make it look foreign

c) To check if text is easy to understand

d) To increase complexity

2. What impact does a cluttered user interface have?

a) Improves clarity

b) Confuses and overwhelms users

c) Simplifies use

d) Enhances engagement

3. What role does layout effectiveness play in user interface design?

a) Makes it complex

b) Limits colors

c) Reduces readability

d) Improves user experience

4. What should be the main focus when checking educational content in a simulation?

a) Relevance and easy to understand

b) As technical as possible

c) Appeal to all ages

d) Reduce learning parts

5. What is a subjective opinion in evaluating a simulation?

a) A measurable result

b) A personal view

c) A factual statement

d) A coding error

6. What should developers consider for users with dyslexia?

a) File formats

b) Color combinations

c) Data storage

d) Code structure

7. How can an improved user interface design help a simulation succeed?

a) By boosting user experience and engagement

b) By increasing text size only

c) By removing colors

d) By making it complex

8. What role does an organized layout play?

a) Creates complexity

b) Restricts colors

c) Removes content

d) Provides clarity and better use

9. A simulation's timeline is hard to use. What improvement might help?

a) Add more colors

b) Simplify navigation

c) Increase data size

d) Remove instructions

10. What aspect matters most when checking a simulation's user interface?

a) Number of pages

b) Font style only

c) Impact on user experience

d) Only calculation complexity

Answers

1.c	2.b	3.d	4.a	5.b	6.b	7.a	8.d	9.b	10.c

Lesson 26: Planning Research

1. What is a key benefit of conducting research?

a) Limits communication

b) Improves critical skills

c) Reduces job opportunities

d) Avoids data analysis

2. What does the "What" in the five 'Ws' of research refer to?

a) Research location

b) Research participants

c) Research topic

d) Research timeline

3. What does the "Who" in the five 'Ws' represent?

a) Research schedule

b) Research participants

c) Research costs

d) Research tools

4. What should a researcher do if a technique fails?

a) Repeat the experiment

b) Change the topic

c) Ignore the issue

d) Seek expert advice

5. What is an independent research project?

a) Done by a group with outside influence

b) Done without external influence or bias

c) A project without data analysis

d) A project using no random numbers

6. What does data analysis involve?

a) Generating random numbers

b) Tracking events only

c) Examining and interpreting data

d) Sharing results with a group

7. What is meant by "randomness"?

a) Being systematic

b) Being unpredictable, without pattern

c) Recording data

d) Adding up values

8. What is the purpose of a data table in research?

a) To hold class discussions

b) To generate random numbers

c) To structure data for analysis

d) To store raw equipment data

9. What does the "Generate" button do in a random number tool?

a) Starts analysis

b) Records data

c) Produces random numbers

d) Starts a discussion

10. What does "frequency count" mean?

a) How often a value or event occurs

b) The sum of all values

c) Reviewing results

d) Producing random data

Answers

1.b	2.c	3.b	4.d	5.b	6.c	7.b	8.c	9.c	10.a

Lesson 27: Collecting Quantitative Data

1. Which device can record values like heart rate, time, and distance?

a) Computer

b) Smartphone

c) Fitness tracker

d) Tablet

2. Which of the following is NOT a method of collecting quantitative data?

a) Surveys

b) Wearable technologies

c) Interviews

d) Observation

3. Which of these is an example of discrete data?

a) Height of students

b) Number of cars in a parking lot

c) Temperature of a city

d) Weight of fruits

4. In data collection, what does "observation" mean?

a) Asking people opinions

b) Counting events as they occur

c) Designing app layouts

d) Analyzing survey answers

5. Which type of data is "number of students in a class"?

a) Qualitative

b) Quantitative

c) Primary only

d) Secondary only

6. Which app best tracks quantitative data?

a) Calculator

b) Social media

c) Weather

d) Fitness tracking

7. What is the main role of surveys in research?

a) To gather opinions and preferences

b) To measure heartbeats

c) To design experiments

d) To store data

8. What is data analysis?

a) Collecting raw data

b) Designing software

c) Examining and interpreting data

d) Presenting results only

9. Wearable fitness trackers use data to:

a) Play songs

b) Measure activity and heart rate

c) Take photos

d) Send texts

10. Which of the following is directly linked with data analysis?

a) Data collection

b) Analyzed data

c) Purpose only

d) User interface

Answers

1.c	2.c	3.b	4.b	5.b	6.d	7.a	8.c	9.b	10.b

Lesson 28: Using Questionnaires and Interviews

1. Which type of questions are most common in questionnaires?

a) Open-ended

b) Closed-ended

c) Hypothetical

d) Leading

2. Why might scale-based data collection cause problems?

a) It forces choices

b) It may not explain reasons behind answers

c) It collects only qualitative data

d) It excludes personal opinions

3. What is the main purpose of a spreadsheet in research?

a) To collect text answers

b) To organize data for analysis

c) To conduct interviews

d) To create only charts

4. Which method is used to analyze qualitative data?

a) Statistical software

b) Content analysis

c) Regression analysis

d) Histogram

5. How is an interview different from a questionnaire?

a) Interview = one-to-one talk, Questionnaire = printed questions

b) Interview = always online, Questionnaire = face-to-face

c) Interview = structured, Questionnaire = unstructured

d) Interview = quantitative, Questionnaire = qualitative

6. What does "data processing" mean in analysis?

a) Collecting responses

b) Creating charts

c) Organizing, manipulating, interpreting data

d) Sharing data publicly

7. Which is an example of a scale question?

a) What is your favorite color?

b) Do you use social media?

c) How much time do you spend online?

d) What do you like doing in free time?

8. What does "mathematical range" measure?

a) Average of data

b) Difference between highest and lowest values

c) Most frequent value

d) Spread between two averages

9. What is the key objective when designing survey or interview questions?

a) To confuse respondents

b) To keep questions personal

c) To know exactly what needs to be found out

d) To ask as many questions as possible

10. How can a limited survey list be improved?

a) Add an "Other" option

b) Exclude items

c) Use scales only

d) Create more lists

Answers

1.b	2.b	3.b	4.b	5.a	6.c	7.c	8.b	9.c	10.a

Lesson 25: Collecting and Analyzing Data

1.   What is the main difference between qualitative and quantitative data?

a) Qualitative = numerical, Quantitative = descriptive

b) Qualitative = measurable, Quantitative = observational

c) Qualitative = descriptive, Quantitative = numerical

d) Qualitative = survey, Quantitative = experiment

2.   Which of the following is an example of qualitative data?

a) Temperature of water

b) Weight of a book

c) Color of a flower

d) Speed of a car

3.   What is the main characteristic of quantitative data?

a) Based on opinions

b) Can be counted or measured

c) Always subjective

d) Collected through interviews

4.   What does the term "range" mean in data analysis?

a) Average value

b) Most frequent value

c) Middle value

d) Difference between lowest and highest values

5.   What does it mean if data is "reliable"?

a) It is always changing

b) It would be the same if collected again

c) It is 100% error-free

d) It is based on personal feelings

6. What is primary data?

a) Data collected by the government

b) Data used for another purpose

c) Data you gather yourself for a purpose

d) Data taken from online sources

7. Which of the following is an example of primary data?

a) Customer reviews on a website

b) A researcher conducting interviews

c) A student citing a textbook

d) A news article reporting survey results

8. What is the main characteristic of secondary data?

a) Collected directly from the source

b) Always accurate

c) Collected for one purpose, later reused

d) Constantly changing

9. Why is it important to know whether data is qualitative or quantitative?

a) Qualitative data is always better

b) Quantitative data is more valuable

c) It decides the analysis methods used

d) Both are analyzed the same way

10. What is the main feature of primary data?

a) Collected from an original source for a purpose

b) Randomly picked from a database

c) Always government-owned

d) Always error-free

Answers

1.c	2.c	3.b	4.d	5.b	6.c	7.b	8.c	9.c	10.a

Lesson 29: Data Analysis

1. What is data analysis?

a) Collecting data

b) Studying data to draw conclusions

c) Designing questionnaires

d) Making spreadsheets

2. What does "collate" mean in data analysis?

a) To create graphs

b) To collect and combine data

c) To calculate averages

d) To interpret results

3. Which measure of central tendency is the middle value?

a) Mean

b) Median

c) Mode

d) Range

4. What is the purpose of a questionnaire?

a) To organize data in a table

b) To collect information or opinions

c) To calculate averages

d) To display graphs

5. In data analysis, what does "mathematical range" show?

a) Average value

b) Spread of data

c) Most frequent value

d) Difference between highest and lowest

6. Which chart shows proportions using a circle divided into sectors?

a) Line chart

b) Bar chart

c) Scatter plot

d) Pie chart

7. What software is widely used for data analysis?

a) Word

b) PowerPoint

c) Excel

d) Photoshop

8. Which type of graph best represents the distribution of one quantitative variable?

a) Bar chart

b) Pie chart

c) Histogram

d) Line chart

9. The process of organizing, manipulating, and interpreting data is called:

a) Data collection

b) Data processing

c) Data entry

d) Data storage

10. What do we call the outcomes or deductions drawn from data analysis?

a) Spreadsheets

b) Averages

c) Conclusions

d) Questionnaires

Answers

1.b	2.b	3.b	4.b	5.d	6.d	7.c	8.c	9.b	10.c

Lesson 30: Presenting Research Findings

1. What is the primary purpose of a presentation?

a) Conveying research findings

b) Data collection

c) Creating visual aids

d) Analyzing results

2. What type of data is numerical and measurable?

a) Presentation Data

b) Qualitative Data

c) Quantitative Data

d) Visual Data

3. Who are individuals participating in a research study?

a) Animators

b) Participants

c) Presenters

d) Reviewers

4. Which term describes a dynamic visual using motion to communicate information?

a) Presentation Software

b) Visual Aids

c) Data Collection

d) Animation

5. What are supplementary materials used to enhance presentations?

a) Data Collection Methods

b) Review Materials

c) Animation Software

d) Visual Aids

6. Which software is used to create and deliver slide-based presentations?

a) Animation Software

b) Presentation Software

c) Data Analysis Software

d) Visual Aids Software

7. What is the main purpose of animation in presentations?

a) To collect data

b) To review research methods

c) To create visual aids

d) To convey information with motion

8. What type of data is descriptive and non-numerical?

a) Quantitative Data

b) Qualitative Data

c) Visual Data

d) Presentation Data

9. What are methods used to gather research information called?

a) Data Analysis Methods

b) Data Collection Methods

c) Review Methods

d) Animation Methods

10. What is the process of summarizing key aspects of research for presentation?

a) Data Collection

b) Presentation

c) Review

d) Animation

Answers

1.a	2.c	3.b	4.d	5.d	6.b	7.d	8.b	9.b	10.c