

Name and faculty number:

1. Which one is correct:
 - (a) `Box<Integer> integerBox = new Box<Integer>();`
 - (b) `Box<Integer> integerBox = new <Integer>Box();`
 - (c) `Box integerBox<Integer> = new Box<Integer>();`
 - (d) `Box<int> integerBox = new Box<int>();`
2. Uniform resource locator:
 - (a) URL is a Java interface
 - (b) an address to a resource on the Internet
 - (c) a set of decimal values separated by dots that indicate an network address
 - (d) a combination between an IP address and a port number
3. Java networking programs are programmed at:
 - (a) application layer
 - (b) transport layer
 - (c) data link layer
 - (d) network layer
4. Which is not true:
 - (a) construction of parametrized types is impossible
 - (b) no static fields of type parameters
 - (c) you can create arrays of generic types
 - (d) type parameters cannot be primitive data types
5. *Catch or Specify Requirement* means that:
 - (a) Java code catches the exception and then re throws it again
 - (b) catch exception in `try` or re throw it with `throws`
 - (c) JVM will handle exception by itself
 - (d) Java code does not have to catch the exception
6. In datagram-based communication
 - (a) server binds a socket to a port number
 - (b) port numbers are not used
 - (c) the packet itself contains the port number
 - (d) the client binds a socket to a port number
7. A socket is:
 - (a) a connectionless packet delivery service
 - (b) receiving endpoint for IP multicast packages
 - (c) one endpoint of a two-way communication link between two programs on the network
 - (d) sending/receiving endpoint for packet delivery service
8.

```
FileReader in = null;
try {
    in = new FileReader ("input.txt");
}
```

 - (a) unbuffered input byte stream
 - (b) unbuffered input character stream
 - (c) buffered input character stream
 - (d) buffered input byte stream
9. Swing is:
 - (a) the Java 2D API
 - (b) the part of NetBeans that allow GUI development
 - (c) third-part library for GUI development in Java
 - (d) the project that comprise the lightweight GUI components in JFC
10. Look is:
 - (a) both how widgets appear and behave
 - (b) how widgets appear
 - (c) the accessibility API of the widget
 - (d) how widgets behave
11. Swing code runs:
 - (a) on different threads at the same time
 - (b) in a separate process, designed to work with GUI components
 - (c) on a separate thread, the event dispatch thread
 - (d) obligatory in the main thread
12. Each GUI component is contained in *containment hierarchy*:
 - (a) it can be outside the containment hierarchy
 - (b) multiple times, depending on its occurrence
 - (c) two times: once in the content pane, and once in the `JPanel`
 - (d) only once
13. Relational databases organize data
 - (a) in networks

- (b) in binary trees
- (c) in objects
- (d) in tables

14. Database table structure:

- (a) the number of both rows and columns is not fixed
- (b) fixed number of rows and named columns
- (c) fixed number of rows and any number of named columns
- (d) fixed number of named columns and any number of rows

15. In Swing layout is provided by:

- (a) content pane of the top-level containers
- (b) the graphical containers themselves
- (c) NetBeans graphical tools
- (d) layout managers applied to any graphical container

16. The following SQL statement will:

```
CREATE TABLE Employee (
    Id CHAR(7) PRIMARY KEY,
    Name VARCHAR(10),
    Age INTEGER,
    Gender CHAR(1)
)
```

- (a) create a table with four rows
- (b) create a table with ten rows
- (c) create a table with four columns
- (d) create a table with seven columns

17. Single Java application can be composed by:

- (a) single thread and multiple processes
- (b) single process and multiple threads
- (c) single process and single thread
- (d) multiple processes managed by JVM

18. To implement concurrency in Java, use:

- (a) processes
- (b) JVM – it does it automatically
- (c) threads
- (d) the event dispatch thread

19. In a join query the involved tables are listed in

- (a) FROM clause

- (b) WHERE clause

- (c) SELECT clause

- (d) are not listed because the syntax TABLE.Column is used

20. Thread interference means:

- (a) two operations that run in different threads, acting on the same data, interleave
- (b) different threads have inconsistent actions with the same data
- (c) a thread cannot access a resource that is needed for it to complete
- (d) multiple threads are waiting for each other to complete

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1. Generics in Java are a mechanism to parametrize:
 - (a) data types
 - (b) methods input values
 - (c) method return values
 - (d) class identifiers
2. `Pair <Integer, Integer> pairInt = new Pair <>();`
`Pair <Number, Number> pairNumb = pairInt ;`
 - (a) correct, because of type inference
 - (b) correct, `Pair <Integer, Integer>` is a subtype of `Pair <Number, Number>`
 - (c) not correct, `Pair <Integer, Integer>` is not a subtype of `Pair <Number, Number>`
 - (d) not correct, because the type arguments after the constructor are omitted
3. Generics after compilations:
 - (a) are replaced with the concrete values
 - (b) remain parametrized types
 - (c) are replaced with the type arguments
 - (d) type parameters are replaced by `Object` or with their bounds
4. User datagram protocol:
 - (a) connection-based protocol, provides reliable data flow
 - (b) protocol used for file transfer
 - (c) bidirectional interactive text communication
 - (d) protocol that sends independent packets of data
5. Port number indicates:
 - (a) resource location
 - (b) application on the computer
 - (c) address of the computer in Internet
 - (d) the protocol used
6. In connection-based communication:
 - (a) the packet itself contains the port number
 - (b) the client binds a socket to a port number
 - (c) server binds a socket to a port number
 - (d) port numbers are not used
7. In a network communication an endpoint is defined by:
 - (a) an IP address and a port number
 - (b) network interface
 - (c) a protocol to access, and a location
 - (d) a client and a server
8. After opening a socket, a client:
 - (a) reads/writes data to the socket
 - (b) closes the resources
 - (c) sends independent packets of data to the server
 - (d) opens I/O streams
9. Which is true:
 - (a) both Swing and JFC are part of NetBeans
 - (b) Swing and JFC are separate API
 - (c) JFC is a subset of Swing
 - (d) Swing is a subset of JFC
10. Feel is:
 - (a) the internationalization API of the widget
 - (b) how widgets behave
 - (c) both how widgets appear and behave
 - (d) how widgets appear
11. Java implementation for connectionless packet delivery service:
 - (a) `MulticastSocket`
 - (b) `DatagramPacket`
 - (c) `DatagramSocket`
 - (d) `Socket`
12. Containment hierarchy is:
 - (a) `JPanel` and its contents
 - (b) graphical nesting of the widgets one inside another
 - (c) a top-level container as root, and all components placed in it
 - (d) inheritance hierarchy of Swing classes
13. SQL is
 - (a) scripting language such as JavaScript
 - (b) language to control any type of DBMS
 - (c) programming language to query and maintain relational databases
 - (d) markup language to communicate with DBMS
14. Table primary key:

- (a) a row that identifies the table
- (b) one or more columns that uniquely identify each row
- (c) a column that numbers each row
- (d) a reference to a unique column in a linked table
- (c) involves multiple tables
- (d) sets the foreign key for a table

15. Layout manager is:

- (a) an option of NetBeans to position correctly graphical elements
- (b) JPanel
- (c) content pane of the top-level containers
- (d) Component whose purpose is to position widgets without using distance units.

16. The following SQL statement will:

```
SELECT Name
FROM Employee
WHERE Age > 30 AND GENDER = 'M'
```

- (a) selects the names of thirty male from table Employee
- (b) selects the name of all employees, older than thirty, from table Employee
- (c) selects the name of all female, older than thirty, from table Employee
- (d) selects the name of all male, older than thirty, from table Employee

17. Concurrent systems are:

- (a) only systems that have multiple processors
- (b) systems that perform multiple tasks at the same time
- (c) application that executes two things at the same time
- (d) a process composed by multiple threads

18. Which one is true:

- (a) a process is a lightweight thread
- (b) a thread can contain multiple processes
- (c) thread is a synonymous to application
- (d) a process can contain multiple threads

19. A join is a query that:

- (a) links tables together
- (b) involves multiple columns

20. To avoid thread interference:

- (a) synchronize methods and statements
- (b) sleep one of the threads
- (c) synchronize constructor of the class implementing the thread
- (d) interrupt one of the threads

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1. Java applet is:
 - (a) an HTML 5 tag <APPLET>
 - (b) .java file that is executed in a web browser
 - (c) a JavaScript in a web page
 - (d) small application, written in Java, delivered in byte-code, launched from a web page
2. Generic method is:
 - (a) a method that has a generic type as return type
 - (b) any method in a generic class
 - (c) a method with its own type parameters
 - (d) a method that has a generic type as parameters
3. Type erasure is:
 - (a) the ability of generics to ignore data types
 - (b) the mechanism in which Java implements generics
 - (c) the ability of a reference of a given data type to point to a object of another type
 - (d) the ability of Java to erase all data types
4. Transmission control protocol:
 - (a) protocol that sends independent packets of data
 - (b) bidirectional interactive text communication
 - (c) protocol used for file transfer
 - (d) connection-based protocol, provides reliable data flow
5. Throwing an exception is:
 - (a) is the mechanism in which the program catches the exceptional situations
 - (b) creating an exception object and handing it to the runtime system
 - (c) an error object created by the JVM
 - (d) error generated by the Java compiler
6. Checked exception is an exception:
 - (a) the application cannot recover from
 - (b) the application should recover from
 - (c) handled by the compiler
 - (d) external for the program
7. try {
 }
} catch (Exception e) {
 }
} catch (ArithmeticException a) {
 }
}
 - (a) you cannot have more than one catch for a singly try
 - (b) the types of catch blocks are ordered absolutely correctly
 - (c) the types of catch blocks are not ordered correctly
 - (d) will generate compiler warning, but will work correctly
8. Client actions are:
 - (a) open socket, read/write to socket, close socket
 - (b) open streams, read/write to streams, close streams, open socket, close socket
 - (c) open socket, open streams, read/write to streams, close streams, close socket
 - (d) open streams, open socket, read/write to streams, close socket, close streams
9. JFC is:
 - (a) the Java internationalization toolkit
 - (b) the Java 2D API
 - (c) a part of Swing toolkit
 - (d) broad API that contains a set of GUI components and services
10. The order of datagrams arrival:
 - (a) depends on how the server sends them
 - (b) depends on the client and how it receives them
 - (c) is not guaranteed
 - (d) is monitored by the transport layer
11. Java implementation for sending/receiving datagram packages:
 - (a) Socket
 - (b) MulticastSocket
 - (c) DatagramPacket
 - (d) DatagramSocket
12. The three top-level container classes in Swing are:

- (a) JButton, JCheckBox, JRadioButton
 - (b) JFrame, JDialog, JApplet
 - (c) JEditorPane, JTextPane, JTextField
 - (d) JMenuItem, JCheckBoxMenuItem, JToggleButton
13. Who is responsible for the database management:
- (a) SQL
 - (b) JVM
 - (c) DBMS
 - (d) the application that works with it
14. Table foreign key:
- (a) reference to a primary key in a linked table
 - (b) one or more columns that uniquely identify each row
 - (c) a row that identifies the table
 - (d) a column that numbers each row
15. Event listeners:
- (a) are provided by the top-level containers
 - (b) are part of layout managers
 - (c) are defined in the widget classes themselves
 - (d) are part of user defined classes
16. Which column must have unique values:
- ```
CREATE TABLE Employee (
 Id CHAR(7) PRIMARY KEY,
 Name VARCHAR(10),
 Age INTEGER,
 Gender CHAR(1)
)
```
- (a) fourth
  - (b) second
  - (c) first
  - (d) third
17. Definition of concurrent software is:
- (a) refers to parallel programming algorithms
  - (b) an application that fights for system resources with other applications
  - (c) an application that performs multiple tasks at the same time
  - (d) computer system that perform multiple tasks at the same time
18. An execution unit that is a self-contained environment with own resources is a:
- (a) process
  - (b) thread
  - (c) the whole OS
  - (d) both process and thread
19. In a join query the involved columns are denoted by:
- (a) only the column name
  - (b) column name is included in the WHERE clause
  - (c) TABLE.Column
  - (d) Column.TABLE
20. When `interrupt()` is invoked on a thread
- (a) interrupted thread sleeps and waits for a given time period
  - (b) the thread is terminated immediately
  - (c) the thread is joined with the main thread
  - (d) interrupted thread itself defines how to interrupt