**Quiz – Exception Handling and Memory managements**

**1.What is the purpose of Exception Handling in programming?**

* To gracefully handle unexpected situations and prevent program crashes
* To enhance program performance
* To ignore errors and continue program execution
* To reduce code complexity

**Explanation**

Exception handling is used to handle runtime errors and ensure that the normal flow of the program is not disrupted. It allows the program to gracefully handle unexpected situations.

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**2.Which keyword is used to handle exceptions in Python?**

* try/throw
* try/catch
* try/except
* try/catch/finally

**Explanation**

In Python, the 'try' and 'except' keywords are used for exception handling. The 'try' block contains the code that might raise an exception, and the 'except' block handles the exception if it occurs.

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**3.What will the following Python code output? try: print(x) except NameError: print('Variable x is not defined')**

* Variable x is not defined
* NameError: variable name 'x' is not defined
* None
* Error: x is not defined

**Explanation**

The code will output 'Variable x is not defined' because the 'try' block attempts to print the value of 'x', but since 'x' is not defined, a NameError will occur, causing the 'except' block to be executed.

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**4.Which of the following is NOT a valid memory management technique?**

* Manual memory management
* Garbage collection
* Memory swapping
* Dynamic memory allocation

**Explanation**

Dynamic memory allocation, garbage collection, and manual memory management are common memory management techniques. Memory swapping, however, is not a memory management technique but rather a technique used by the operating system to manage processes' memory.

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**5.What is the purpose of a finally block in exception handling?**

* To catch and handle exceptions
* To execute code that should always run
* To clean up the code
* To re-raise the exception

**Explanation**

The finally block is used to execute code that should always run, whether an exception is raised or not. It is typically used for releasing external resources like files or database connections.

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**6.Which of the following is NOT a file mode in Python?**

* wx (write + execute)
* r (read)
* a (append)
* r+ (read and write)

**Explanation**

In Python, the 'wx' mode does not exist. The valid file modes are 'r' (read), 'w' (write), 'a' (append), 'r+' (read and write), and 'a+' (append and read).

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**7.How can memory leaks impact a program?**

* Improve program performance
* Cause the program to crash
* Reduce code complexity
* Prevent memory allocation errors

**Explanation**

Memory leaks can lead to a gradual reduction in available memory, causing the program to slow down, crash, or become unresponsive. It can also affect other applications and system performance if not addressed.

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**8.Which of the following is true about stack memory?**

* Used for dynamic memory allocation
* Contains global variables
* Will cause memory leaks if not managed properly
* Used for static memory allocation

**Explanation**

Stack memory is used for static memory allocation and typically contains local variables, function parameters, and return addresses. It is faster but limited in size compared to heap memory.

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**9.What does the 'free' function do in C programming?**

* Allocate memory
* Deallocate memory
* Return memory address
* Resize allocated memory

**Explanation**

The 'free' function in C is used to deallocate the memory that was previously allocated using 'malloc', 'calloc', or 'realloc'. This helps prevent memory leaks and efficiently manages memory usage.

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**10.In C++, which operator is used for dynamic memory allocation?**

* alloc
* malloc
* allocate
* new

**Explanation**

The 'new' operator in C++ is used for dynamic memory allocation. It is followed by the data type and returns a pointer to the allocated memory.

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**11.What is the role of a destructor in C++?**

* Allocate memory
* Release resources and perform cleanup tasks
* Create objects
* Deal with exceptions

**Explanation**

In C++, a destructor is used to release resources and perform cleanup tasks before an object is destroyed or deallocated. It is the counterpart of a constructor and is called when the object goes out of scope or is explicitly deleted.

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**12.Which of the following is NOT true about file handling in Java?**

* FileWriter is used for character-oriented file handling
* BufferedWriter is used to read character-oriented input
* FileInputStream is used for byte-oriented file handling
* BufferedReader is used to improve performance of character-oriented I/O operations

**Explanation**

In Java, 'FileWriter' and 'FileReader' are used for character-oriented file handling. 'BufferedWriter' and 'BufferedReader' are used for improving the performance of character-oriented I/O operations, while 'FileInputStream' is used for byte-oriented file handling.

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**13.What is the purpose of the 'finally' block in Java exception handling?**

* To catch and handle exceptions
* To execute code that should always run
* To re-throw the caught exception
* To prevent exceptions from being caught

**Explanation**

The 'finally' block is used to execute code that should always run, regardless of whether an exception is caught or not. It is typically used for releasing resources like file handles or database connections.

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**14.What is the role of 'finally' block in Python exception handling?**

* To catch and handle exceptions
* To execute code that should always run
* To re-raise the exception
* To ignore the exception

**Explanation**

In Python, the 'finally' block is used to execute code that should always run, whether an exception is raised or not. It is typically used for releasing external resources like files and network connections.

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**15.Which method is used to read a line of text from a file in Java?**

* readText
* readLine
* readString
* readChar

**Explanation**

The 'readLine' method is used to read a line of text from a file in Java. It is available in the BufferedReader class and reads characters from the input stream until a newline character is encountered.

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**16.What will the following C code snippet do? int \*ptr = (int \*)malloc(sizeof(int)); ...**

* Allocate memory for an integer
* Free the allocated memory
* Create a pointer to an integer
* Declare an integer variable

**Explanation**

The code snippet allocates memory for an integer using the 'malloc' function and assigns the memory address to the pointer 'ptr'. It is essential to check whether the memory allocation was successful before using the pointer.