ASSIGNMENT - 1

Q1 what are the differences b/w C, C++ and Java.

METRICS	C	C++	JAVA
PARADIGM	Procedural	Object - Oriented	Object - Oriented
ORIGIN	Based on BCPL	Based on C	Based on C (syntax) and C++ (structure)
TRANSLATION	Compiled	Compiled	Interpreted
PLATFORM DEPENDENCY	Platform dependent	Platform dependent	Platform Independent
EXECUTION	Direct	Direct	Via JVM
APPROACH	Top - down	Bottom - up	Bottom - up
KEYWORDS	32 keywords	63 keywords	50 defined keywords
INHERITENCE	Not Supported	Supported	Supported except Multiple Inheritance
POINTERS	Supported	Supported	Not Supported
HEADER FILES	Supported (#include, etc)	Supported (#include, etc)	Use Packages (import)

Q2. Describe HISTORY and VERSIONS of JAVA in brief.

Ans. > HISTORY of JAVA

- JAMES GOSLING, MIKE SHERIDAN, and PATRICK NAUGHTON initiated the Java language project in June 1991.

- It was initially designed for small, embedded systems in appliances like set-up boxes.

- Firstly, it was dealled "GREENTALK" by James Gosling, and the file extension was .gt.

- After that, it was called "OAK" and developed as a part of the Green Project.

  - WHY "OAK"?

- Oak was a symbol of strength.

- In 1995, Oak was renamed as "JAVA" as it was already a trademark by Oak Technologies.

  - WHY "JAVA"?

- Several alternatives like JAVA, DNA, SILK, etc.

- JAVA was chosen as it was so unique.

- The name originates from a sort of espresso bean, Java. Gosling came up with this while having coffee.

> VERSIONS OF JAVA

VERSION	RELEASE DATE	MAJOR CHANGES
JDK BETA	1995	
JDK 1.0	January 1996	The very first version was released on January 23, 1996. The principle stable variant, JDK 1.0.2, is called JAVA 1.0.
JDK 1.1	19 February 1997	• Broad retooling of AWT occasion • Inner classes added • Java Beans • JDBC • RMI
J2SE 1.2	8 December 1998	• Codenamed "Playarea". • strictfp keyword. • Java module • Collections system.
J2SE 1.3	8 May 2000	• Codenamed "KESTREL" • HotSpot JVM included • JPDA • Java Sound
J2SE 1.4	6 February 2002	• Codenamed "MERLIN" • Library improvements • JPEG/PNG supported

J2SE 5.0	30 September 2004	• Codenamed "TIGER"
		• Added new features :
		– for-each loop
		– Generics
		– Autoboxing
		– Var-args
JAVA SE 6	11 December 2006	• Codenamed "MUSTANG"
		• Database superviser
		• Scripting languages in JVM support
		• JDBC 4.0 support
JAVA SE 7	7 July 2001	• Codenamed "DOLPHIN"
		• Dynamic language support in JVM
		• Binary Integer literals
		• Upstream updates to XML & Unicode
JAVA SE 8	18 March 2014	• Lambda expression support
		• New date/time API
JAVA SE 9	21 September 2017	• Project JIGSAW : A module system for JAVA SE platform, and apply it to the system itself and the JDK.
JAVA SE 10	20 March 2018	• Additional Unicode language
		• Root certificates
		• Thread-local handshakes
		• Remove the native-header generation tool - Javah.

Q3. Write a short note on JVM (Java Virtual Machine).

Ans > WHAT IS JVM?

- JVM is the engine that drives the Java code.
- When we compile a Java program, then bytecode is generated. Bytecode is the source code that can be used to run on any platform.
- BYTECODE is an intermediary language between Java source and the host system.
- BYTECODE can run on any JVM enabled machines making Java platform independent.

> WHAT JVM DOES

- Read BYTECODE
- Verify BYTECODE
- Link the code with the library.

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 ┌─────────────┐      ┌──────────────┐      ┌───────────┐
 │    JAVA     │      │              │      │           │
 │ SOURCE CODE │─────→│ JAVA COMPILER│─────→│ BYTECODE  │
 │             │      │              │      │           │
 └─────────────┘      └──────────────┘      └───────────┘
                                                  │
                                                  ↓
                      ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
                                 JVM
                      │ ┌──────────────────┐     │
                        │ JAVA INTERPRETER │
                      │ └──────────────────┘     │
                      └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
                                  │
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                         ┌───────────────┐
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