CDAC Mumbai PG-DAC AUGUST 24 Assignment No- 3

Note: Write down this Interview questions & answers in your notebook .take a screenshorts ,make word file & upload on Github.

1) Explain the components of the JDK.

	Date
	Assignment No 803
1>	Explain the components of the JDE Tava Development Kit (JDE) is a complete exoftware development enversely and to live I
+	Java Development Kit (JOK) is a complete
Palis	development environment used to develop Java applications.
	2 applications.
	The main components of JOK are
	3 (NAME AND ADDRESS OF THE PARTY OF THE PAR
	Java Composer (Savac) . Convert Tour source and
9	Java Compiler (javac): Convert Java source code into bytecode, which is the Intermediate representation of java program.
	Take program.
	The state of the s
•	Java Runtime Environment (JRF): Provides libraries,
w103	JVM & other components necessary to run Java
1 BOT	oupplication
	of design of the real value of the south and south a
	Java Debugger (jdb): A tool to debug java application
	July Designed (Jul) . It was 25 curry July approved
	Toughor (Pariador) . A tool to agreenate API documentate
	JavaDoc (Pavadoc): A tool to generate API documentate in NTMI formate from Java source code comments.
	in wine formace from saving source order comments.
a	Tour Archeus Toul (com) & A toul to package and tolo
a	Java Archive Tool (jar): A tool to package multiple Java classes & tesources into a single archive file (JA
	Java classes & resources into a engle ascuve fire (JA
	- Decreambles (Payon) & a 1 1 12 view the buters
•	Java Disassembler (garap): A tool to view the bytecoo
	of compiled Java classes.
-	
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2) Differentiate between JDK, JVM, and JRE.

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2>	Differentiale between JDIC, JVM. & JRE
7	
0	JDK (Jana Development Kit):
الكار	A full-fledged development Est used for dueloping gano application, which includes the TRE, compiler,
thought.	Jana application, which includes the TRE, compiler,
	albugger & other tools.
	The medic companion of Jok are
	JYM (Java Virtual Machine):
300	A runtime environment that executes Java bytecode,
0 1.033	providing platform independent by abstracting the
	underlying hardware & 0s. margare was
99 60 0	JRE (Java Runtime Environment) &
1000	A subset of the JDK duat Encludes the JVM, core
	libraries, & other components necessary to run Java
	applications but does nut includes development tools
applica	IPte the complier. A & (db) supposed phot
nember	. Jord Dec (Langgles) & 4 tool to assert APF que
MAS EN	IN ATIME Transfe from Java Fource code co
2/241/1	Toda Artific Teat (Par) + 4 teat to participa an

3) What is the role of the JVM in Java? & How does the JVM execute Java code?

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3>	What is the role of JVM in Javo & How does the JVM
	execute Java code?
7	Role of Japa & The Jum is the connerstone of Javo's
	platform independence. It abstracts the undertuing - c 0
	hardware, allowing Taya arranges to my an and lades
, a Mil	with a compatible IVM, regardless of the platform
	Executions of Java Code
	Execution of Jaro Code.
1.	Compilation: Java Source code is compiled into bytecode
	by the garac compiler
	e Permanent Glencruice
2,	Class Loading & The JVM's class loader tods by bytelode
	Class Loading & The Jum's class loader tods by bylecode
33012 0	variables, & reterence. Foch theread has in ou
3.	Byterode Verification & Byterode is verified to ensure it
H	doesn't violate security constraints or perform unsafe
	operation.
4.	Execution: The JVM interprets the bytecode on uses the
	Just-In-Time (JIT) compiler to translate it into name
	machine code for faster execution.
gladge	
5.	The TUM multimatically harans
10	man and management
	objects that are no loge longer referenced.

4) Explain the memory management system of the JVM.

	Page.
4)	Explain the memory management system of the JVM.
2'010	The JVM memory management system is divided
2 2	The JVM memory management system is divided into sweral regions of
grippe device	HIE WO WHELST SHILLDED DEDY PREMOTE STREET
*	Heap Memory & where all objects & class instance are allocated.
	are allocated.
-	It is divided into ? have be walled
appead	· Young Generation
	· Old Generation
	· Permanent Generation
aborthe	es class leading & The Dill's class leads to u
*	Stack Memory & Stores method call frames, local
	variables, & references. Each threead hers is own stack
ti ann	a of bother is showing a notion of the to a
*	Program (ounter (PC) Register & keeps track of the
	current instellion bong executed
X	Native Method Stack & Contains all native method
te natii	calls used in the applications.
	Martin and and when with the
*	Grarbage Collection & the JVM's garbage collector
1011	automatteelly real aims harman to
pd hk	automatically reclaims memory by b deleting objects that are no longer in use.
	Epiler mat are no longer reteremed.

5) What are the JIT compiler and its role in the JVM? What is the bytecode and why is it important for Java?

5>	What are the TIT complete & all
	What are the JIT compiler & 945 role in JVM & What is byterode, & why is it important &
	a important for Java ?
7	TTT CHICA PLAN & C. ANALYSIA TO ANALYSIA AND ANTI-
*	JIT compiler of the JVM that improves
	performance by compiling bytecode into native machine cod
THEFT	at runtime, rather than enterpreting it live - bu- live
	come compiled, the native code can be executed direct
	by the CPU, making the execution faster.
	a Runtime Data Parens
*	Bytecode : An intermediate , platform - independent code
	generated by the Java compiler. It is not specific +
	any particular processor or os, which is why javo is
	"write once, run anywhere".
	and the state of t
	Importance of Bytecode
	application should plures 3 acripat portuge 31
	in the second se
v	1 0010
60	security
•	Efficiency rational agranted as

6) Describe the architecture of the JVM.

	Page.	
5>	Descrîbe the architecture of JVM.	12/2
=>	TO THE PERSON NAMED OF THE PERSON OF THE PER	
	The architecture of the JVM includes the following k	ey
BN 23 9 17	components %	*
200 000	Time, withou at it storaged grillyons got servering	
*	class Loader: Loads class file Puto memory, verifies &	pylecod
porth k	& prepare it for execution.	
	by the city, making sec elecentrica start.	
*	Runtime Data Areas	
the rody	· Method Area	H
240	· Map	
240	· stack	
	· Pc Registers	
	. Native Method Stack.	
	Annya town e en trying of	
*	Execution Engine & Executes byterode instructions.	
	· Interpreter	9
	· JIT compiler	-10
	o Garbage Collector.	3
		1
		1 1

7) How does Java achieve platform independence through the JVM?

	Date
→	How does Java achieve platform independence through the IVM? Javo achieves platform independence by compiling Javo source code into bytecode, which is not tied to any specific machine and into bytecode.
9.1	specific machine orchitecture. The bytecode can be executed on any platform that has a JVM, which Interprets or comples the bytecode into machine-specific code. This abstraction allows the same Java program to run on different platforms without modification

8) What is the significance of the class loader in Java? What is the process of garbage collection in Java.?

	Them is become them and wine come
8>	What Ps the significance of the class Loader Pn Javo?
muld	what is the process of garbage collection in Tava?
+	
*	Class loader :
•	significance's the class loader is everponed ble for dynamicily
	loading Java classes who the JVM iduring runtime.
	It also handles the linking of classes, including bytecode
	retification & memory allocation. The class toader ensures
	that classes are loaded only once, avoiding conflicts & ensuring
	proper class verstoning.
	Charbage Collection &
*	suchage collection in Java 13 an automate process
•	that identifiers & removes objects that are no longer referenced
2,40	that identifiers & removes of the garbage collector
	by the application, freeing up memory. The garbage collector
104	them objects
	mememory of the same parkage

6	Date
Karangh	The process involves ; old symbol and bush word
Tava	· Manking & Felentifying objects that are still in use. · Sweeping objects that are no longer referenced
	· compacting : Reorganizing memory to reduce fragmentation

9) What are the four access modifiers in Java, and how do they differ from each other?

·	The state of the s
9>	what are the four acres modifiers in Tous, &
27,44	how do they differ from each other?
-	what are the four access modifiers in Tauo, 2 how do they differ from each other? The four access modifiers in javo are?
	on different platforms without modification
_ 1	Dublic : Accessible from any other class.
Sovot	It what is the straightours of the star doorse for
2	. Protected : Accessible within the same package & by subclass
	even if they are in different pockages.
	Default (Package-Private) & Accessible only within same
MITTER	Default (Package-Private) & Accessible only within same package, no keyword is used.
by Herod e.	I It also handles the lineing of closes, instituting
4.	Private: Accessible only within the same class.
garagaria 9	that dosses are loaded only once, avoiding confilets
*	Differences:
0	Public is the most permissive, while private is most restricted
Q	· Percent Garbage collection in Soula is our culternat
	Protected allows access within the same pockage & to subclan,
N @lastJaa	Protected allows access within the same pockage & to subclan, while default rustulcts raceers to the same package.
alany 0	constant is the background and principle of the laws
A	Private members are the hidden from all othe classes even within the same package.
	within the same package
	even must

10) What is the difference between public, protected, and default access modifiers?

不 5000000000000000000000000000000000000	that closses are seased ours and and the first
*	Differences:
0	Public is the most permissive, while private is most restricted
7,500	e Paci es e Garbage collection in raid is an culternat
100	Protected allows access within the same pockage & to subclan,
- y classian	Protected allows access within the same pockage & to subclan, while default mustulet raccess to the same package.
8	Private members are the hidden from all othe classes
	Prévate members are ette hidden from all othe classes even within du same package

11) Can you override a method with a different access modifier in a subclass? For example, can a protected method in a superclass be overridden with a private method in a subclass? Explain

	Date
u	
1011	Ho, you cannot override a man .
70	Ho, you cannot override a method with a more restrictive
17 891	access modifier. If a method in the superclass is protected
0.1	the overniding method in the subcloss must be protected or
	public, but not private This is because the overridden
	method should maintain or broaden the accessibility a
	to preserve the malities
	& behavior contract defined by the supercloss.

12) What is the difference between protected and default (package-private) access?

12>	for the state of t
	Protected: Accessible within the same package & hu
- 44	Protected : Accessible mithin the same package & by subclasses, even if they are in different packages
	because
'n	Default (Private Package): Ascessible only within the
	Same package & not by subclasses outside the package
	where because politate members our not vistell
	some and the first terms

13) Is it possible to make a class private in Java? If yes, where can it be done, and what are the limitations?

13>
Yes, It is possible to make a class private in Java,
but only for nested (inner) classes. A private nested
class ?50 access? ble only within the ower class that
contains 9+.
· when her with parteage product access are rushale and
Limitations & more and multiple small and
are accessible from classes in other passages, even is
I al along as compat be declared as postvate or
protected, they can body be public or package private.

14) Can a top-level class in Java be declared as protected or private? Why or why not?

14)	All the second s
/ for	No, a top-level class cannot be declared as protected
SHORE	or private. A top-level class must be either public or
p by	have default access. This is because a ton-level class
الولين	must be acressible to other classes that may need to
paliti	create instances of it or extend it, I restricting
Ast is	it with private or protected would violate this
	principle: le le bander données sous les

15) What happens if you declare a variable or method as private in a class and try to access it from another class within the same package?

12>	451
44	If we declared variable or method as private, it
	If we declared variable or method as private, it is accessible only within the same class where it is
	declared.
in the	If they they to access it fewom another class even
paten	It ten feig to access it fecom another class even within same package, will result in a compilation
	ever because poivate members are not visible
	outside their defining class.

16) Explain the concept of "package-private" or "default" access. How does it affect the visibility of class members?

16>	Yes, It is possible the make a class poinate in
100	If no access modfiller is specified, the class member has
-4300	If no access modifier is specified, the class member has package-private access by default.
	4P. animorate
0	Members with package provate access are visible only
	to other classes within the same package. They are
	not accessible from classes in other packages, even it
1000	those classes are subclasses.
	prohesed they can both be public so parting