

Q. 1) What is garbage collection?

- Garbage Collection is an automatic memory management process in Java
- It is performed by the JVM
- It removes unused objects from heap memory
- An object becomes garbage when no reference points to it
- It helps to free memory and avoid memory leaks
- Programmer does not need to delete objects manually
- Garbage Collection runs automatically in the background

Q. 2) What are packages in Java?

- A package is a group of related classes and interfaces
- It is used to organize Java programs
- Packages help in code reusability
- Packages help in avoiding name conflicts
- Packages provide access protection (security)
- Java provides built-in packages like `java.lang`, `java.util`, `java.io`
- Users can also create user-defined packages.

Q. 3) What is the default package?

- The default package is a package with no name
- If you do not write a package statement, the class belongs to the default package
- It is used for small or beginner programs
- Classes in the default package cannot be imported into other packages
- Not recommended for real projects

Q. 4) Explain the use of import statements.

- The `import` statement is used to access classes defined in other packages
- It avoids writing the fully qualified class name every time
- It helps in code readability
- It allows reuse of predefined and user-defined **classes**
- Without `import`, we must use the package name + class name.

Q. 5) What are nested classes in Java?

- A nested class is a class defined inside another class
- It is used to group related classes
- Nested classes help in better code organization
- They increase encapsulation
- Nested classes can access members of the outer class

Q. 6) Write a program to sort characters in a String alphabetically.

```
import java.util.Arrays;
import java.util.Scanner;

public class SortCh {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter a String : ");
        String str = sc.nextLine();

        char[] ch = str.toCharArray();

        Arrays.sort(ch);

        String sortedString = new String(ch);

        System.out.println("Original String : "+str);
        System.out.println("Sorted String : "+sortedString);

    }

}
```

Ouput:-

Enter a String :

chai

Original String : chai

Sorted String : achi

Q. 7) Write a program to convert String to char array.

```
import java.util.Scanner;

public class StringToChar {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter a String : ");
        String str = sc.nextLine();

        char[] ch = str.toCharArray();

        for (int i = 0; i < ch.length; i++) {
            System.out.print(ch[i]);
        }

    }

}
```

```
}  
}
```

Output:-

Enter a String :

Chaitanya

Chaitanya

Q. 8) Write a program to find the length of a String without using length().

```
import java.util.Scanner;  
  
public class LengthOfChar {  
  
    public static void main(String[] args) {  
  
        Scanner sc = new Scanner(System.in);  
  
        System.out.println("Enter a String : ");  
        String str = sc.nextLine();  
  
        char[] ch = str.toCharArray();  
  
        int count = 0;  
  
        for (char x : ch) {  
            count++;  
        }  
        System.out.println("Length of String : "+count);  
  
    }  
}
```

Output:-

Enter a String :

chaitanya singare

Length of String : 17