

DeepSeek Chat

now I want it for lecture 17. This is my practice for Lecture 17 in Java, I want you to make me simple notes based on these notes at first. second I want you to collect a list of questions and answers that I can put into kahoot to practice the answers and not forget the quirks of Lecture 17 in Java.

Methods of Scanner Class

=====

We are gonna learn how to take input from scanner.

IMPORTANT METHODS OF SCANNER Class

=====

1.nextInt(): Accepts an integer from the input resource and returns it

prototype (): public int nextInt()

the return type is int so no need to parse stuff with Integer.parseInt()

2.nextFloat()

prototype : public float nextFloat()

3.nextDouble()

prototype : public double nextDouble()

like this we have nextXXX() methods for every data type except char

because for a single char scan you can just use System.in.read() right??

YUH..

For accepting Strings scanner class has 2 methods :

1.public String next()

2.public String nextLine()

```
2. public String nextLine ()
```

The difference between them is just this ->

next() takes just the first string excludes the SPACES after takes the first word

nextLine() takes the whole string including spaces to the end of the String

WAP to accept age from the user:

Sample ex:

Enter your age: 24

Your age is 24

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

```
class Test{
```

```
    public static void main(String[] args){
```

```
        Scanner kb = new Scanner(System.in);
```

```
        int age;
```

```
        System.out.print("Enter your age: ");
```

```
        age = kb.nextInt();
```

```
        System.out.println("Your age is " + age);
```

```
        //If 24.6 was entered then we get InputMismatchException !
```

```
    }
```

```
}
```

//Till now we have studied 6Exceptions

These 4 revise them

ArrayIndexOutOfBoundsException --> arrays out of bound of range of array

NumberFormatException --> Wrappers

StringIndexOutOfBoundsException --> String index is out of range, passing wrong range in a method of String

InputMismatchException --> when scanning and you get another dataType

than was to be scanned

for scanning ints and adding em use nextInt ()

for scanning float use the method nextFloat ()

for scanning double using method nextDouble ()

with the scanner class

ex:

Q. difference between these codes ?

```
class Greetings {
```

```
    public static void main(String[] args){
        Scanner kb = new Scanner(System.in);
        String name;
        System.out.println("Whats your name?");
        name = kb.next();
        System.out.println("Your name is " + name);
    }
}
```

```
class Greetings {
```

```
    public static void main(String[] args){
        Scanner kb = new Scanner(System.in);
        String name;
        System.out.println("Whats your name?");
        name = kb.nextLine();
        System.out.println("Your name is " + name);
    }
}
```

A. One next() scans the string up until it sees space and the other nextLine () scans

until the user hits enter.

nextLine works for multiline input

next works for single line input

IMPORTANT

=====

characters can be accepted with 1. Scanner 2. System.in.read()

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

```
//Throws compilation error cannot find symbol, there is no nextChar()
```

```
method in java
```

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

```
class Test{
```

```
    public static void main(String[] args){
```

```
        Scanner kb = new Scanner(System.in);
```

```
        char ch;
```

```
        System.out.println("Enter a character : ");
```

```
        kb.nextChar();
```

```
        System.out.println(ch);
```

```
    }
```

```
}
```

```
//Error because character cannot be String converted like that, Incompatible types
```

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

```
class Test{
```

```
    public static void main(String[] args){
```

```
        Scanner kb = new Scanner(System.in);
```

```
        char ch;
```

```
        System.out.println("Enter a character : ");
```

```
        kb.next(); //return String
```

```
        System.out.println(ch);
```

```
    }
```

```
}
```

```
//Valid, take string, n put its first char into ch
```

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

```
class Test{
```

```

public static void main(String[] args){
    Scanner kb = new Scanner (System.in);
    char ch;
    String str;
    System.out.println ("Enter a character : ");
    str = kb.next();
    ch = str.charAt(0);
    System.out.println (ch);
}
}

```

//shorten it like this

```

import java.util.Scanner;
class Test{
    public static void main(String[] args){
        Scanner kb = new Scanner (System.in);
        char ch;
        System.out.println ("Enter a character : ");
        ch = kb.next().charAt(0); //this is called chaining
        System.out.println (ch);
    }
}

```

2. Using System.in.read()

=====

```

import java.util.Scanner;

```

```

class Test{

```

//Whenever using System.in.read, must write throws Exception, will be explained in exception handling.

//or else we get error io exception

//

```

public static void main(String[] args) throws Exception {

```

```

    Scanner kb = new Scanner (System.in);

```

```

    char ch;

```

```

    System.out.println ("Enter a character : ");

```

```

//read has int return type , so must typecast that as (char) or else lossy
conversion from int to char error
ch = System.in.read();
System.out.println(ch);
}
}

```

Solution :

```

import java.util.Scanner;

class Test{
    public static void main(String[] args) throws Exception {
        Scanner kb = new Scanner(System.in);
        char ch;
        System.out.println("Enter a character : ");
        //read has int return type , so must typecast that as (char) or else lossy
        conversion from int to char error
        ch =(char)System.in.read(); //VVIMP even if Sachin was entered , it still
        takes S alone .
        System.out.println(ch);
    }
}

```

Next we use Eclipse IDE.



Simple Notes for Lecture 17: Scanner Class Methods

Scanner Class Methods

The **Scanner** class in Java is used to accept user input from the keyboard or other input sources . It provides various methods to read different types of data .

Key Methods of Scanner Class

1. **next()**

1. `nextInt()` :

- **Prototype:** `public int nextInt()`
- **Description:** Reads an integer from the input.
- **Example:**

java

Copy

```
Scanner sc = new Scanner(System.in);  
int age = sc.nextInt();
```

2. `nextFloat()` :

- **Prototype:** `public float nextFloat()`
- **Description:** Reads a float from the input.
- **Example:**

java

Copy

```
float num = sc.nextFloat();
```

3. `nextDouble()` :

- **Prototype:** `public double nextDouble()`
- **Description:** Reads a double from the input.
- **Example:**

java

Copy

```
double num = sc.nextDouble();
```

4. `next()` :

- **Prototype:** `public String next()`
- **Description:** Reads a single word (up to the first space).
- **Example:**

java

Copy

```
String word = sc.next();
```

5. `nextLine()` :

- **Prototype:** `public String nextLine()`
- **Description:** Reads an entire line (including spaces).
- **Example:**

java

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```
String line = sc.nextLine();
```

Difference Between `next()` and `nextLine()`

- `next()` :
 - Reads input until the first space .
 - Example: For input `"Hello World"` , it reads `"Hello"` .
- `nextLine()` :
 - Reads the entire line, including spaces .
 - Example: For input `"Hello World"` , it reads `"Hello World"` .

Reading Characters with Scanner

- **Problem:** There is no `nextChar()` method in the `Scanner` class .
- **Solution:**
 - Use `next().charAt(0)` to read the first character of the input .
 - Example:

```
java
```

```
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```

```
Scanner sc = new Scanner(System.in);  
char ch = sc.next().charAt(0);
```

Reading Characters with `System.in.read()`

- **Description:** Reads a single character from the input .
- **Prototype:** `public int read() throws IOException`
- **Example:**

```
java
```

```
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```

```
char ch = (char) System.in.read();
```

- **Note:** Must handle `IOException` using `throws Exception` .

Common Exceptions with Scanner

1. `InputMismatchException` :

- Occurs when the input does not match the expected type (e.g. entering a

- Occurs when the input does not match the expected type (e.g., entering a float when `nextInt()` is used).
 - 2. `ArrayIndexOutOfBoundsException` :
 - Occurs when accessing an array index that is out of range.
 - 3. `NumberFormatException` :
 - Occurs when parsing a string that cannot be converted to a number.
 - 4. `StringIndexOutOfBoundsException` :
 - Occurs when accessing a character in a string that is out of range.
-

Example Programs

1. Accepting Age

```
java                                                                    Copy

import java.util.Scanner;

class Test {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter your age: ");
        int age = sc.nextInt();
        System.out.println("Your age is " + age);
    }
}
```

2. Accepting a Character

```
java                                                                    Copy

import java.util.Scanner;

class Test {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a character :");
        char ch = sc.next().charAt(0);
        System.out.println("You entered : " + ch);
    }
}
```

3. Accepting a Character Using `System.in.read()`

java

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```
import java.util.Scanner;

class Test {
    public static void main(String[] args) throws Exception {
        System.out.print("Enter a character : ");
        char ch = (char) System.in.read();
        System.out.println("You entered : " + ch);
    }
}
```

Kahoot Questions and Answers

Scanner Class Methods

1. **Q:** Which method reads an integer from the input?

◦ **A:** `nextInt()`.

2. **Q:** What is the difference between `next()` and `nextLine()`?

◦ **A:** `next()` reads a single word, while `nextLine()` reads an entire line.

3. **Q:** What is the output of the following code?

java

Copy

```
Scanner sc = new Scanner(System.in);
System.out.print("Enter a number : ");
double num = sc.nextDouble();
System.out.println("You entered : " + num);
```

◦ **A:** It prints the number entered by the user.

4. **Q:** What exception is thrown if you enter a float when `nextInt()` is used?

◦ **A:** `InputMismatchException`.

5. **Q:** How do you read a single character using the `Scanner` class?

◦ **A:** Use `next().charAt(0)`.

Reading Characters

6. **Q:** What is the output of the following code?

java

Copy

```
Scanner sc = new Scanner(System.in);
```

```
System.out.print("Enter a character : ");
char ch = sc.next().charAt(0);
System.out.println("You entered : " + ch);
```

- **A:** It prints the first character entered by the user.

7. **Q:** What is the return type of `System.in.read()` ?

- **A:** `int` .

8. **Q:** How do you handle `IOException` when using `System.in.read()` ?

- **A:** Use `throws Exception` in the method signature .

Exceptions

9. **Q:** What exception is thrown when accessing an invalid array index ?

- **A:** `ArrayIndexOutOfBoundsException` .

10. **Q:** What exception is thrown when parsing an invalid number string ?

- **A:** `NumberFormatException` .

11. **Q:** What exception is thrown when accessing an invalid string index ?

- **A:** `StringIndexOutOfBoundsException` .

General Questions

12. **Q:** What is the purpose of the `Scanner` class ?

- **A:** To accept user input from the keyboard or other input sources .

13. **Q:** What is the output of the following code ?

```
java                                                                    Copy
Scanner sc = new Scanner(System.in);
System.out.print("Enter a word : ");
String word = sc.next();
System.out.println("You entered : " + word);
```

- **A:** It prints the first word entered by the user.

14. **Q:** What is the output of the following code ?

```
java                                                                    Copy
Scanner sc = new Scanner(System.in);
System.out.print("Enter a line: ");
String line = sc.nextLine();
```

```
System.out.println("You entered : " + line);
```

- **A:** It prints the entire line entered by the user.

15. **Q:** What is the output of the following code ?

```
java
```

[Copy](#)

```
Scanner sc = new Scanner(System.in);  
System.out.print("Enter a character :");  
char ch = sc.next().charAt(0);  
System.out.println("You entered : " + ch);
```

- **A:** It prints the first character entered by the user.

These notes and questions are designed to help you understand and retain the concepts of the `Scanner` class and its methods . Use the Kahoot questions to test your knowledge ! 😊