LAB 3 – Assignment

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PART A

```
class variableBasics{
   public static void main(String[] args){
      int age=20;
      double cgpa=8.5;
      char grade='A';
      boolean passed=true;
      String name="Ram";

      System.out.println("Name: "+name);
      System.out.println("Age : "+age);
      System.out.println("CGPA : "+cgpa);
      System.out.println("Grade : "+grade);
      System.out.println("Passed : "+passed);
   }
}
```

Output:

```
/usr/java/jdk-17-oracle-x64/bin/java -javaagent:/home/krish/
Name: Ram
Age : 20
CGPA : 8.5
Grade : A
Passed : true

Process finished with exit code 0
```

PART B

Question 1:

```java
class variableBasics{
    public static void main(String[] args){
        int age;
        double cgpa=8.5;
        char grade='A';
        boolean passed=true;
        String name="Ram";

        System.out.println("Name: "+name);
        System.out.println("Age : "+age);
        System.out.println("CGPA : "+cgpa);
        System.out.println("Grade : "+grade);
        System.out.println("Passed : "+passed);
    }
}
```

Output:

Question 2:

```
class variableBasics{
   public static void main(String[] args){
      int age="Twenty";
      double cgpa=8.5;
      char grade='A';
      boolean passed=true;
      String name="Ram";

      System.out.println("Name: "+name);
      System.out.println("Age : "+age);
      System.out.println("CGPA : "+cgpa);
      System.out.println("Grade : "+grade);
      System.out.println("Passed : "+passed);
   }
}
```

Output:

```
java: incompatible types: java.lang.String cannot be converted to int
```

Question 3:

```java
class variableBasics{
    public static void main(String[] args){
        int age=20.9876;
        double cgpa=8.5;
        char grade='A';
        boolean passed=true;
        String name="Ram";

        System.out.println("Name: "+name);
        System.out.println("Age : "+age);
        System.out.println("CGPA : "+cgpa);
        System.out.println("Grade : "+grade);
        System.out.println("Passed : "+passed);
    }
}
```

Output:

```
java: incompatible types: possible lossy conversion from double to int
```

Question 4:

```java
class variableBasics{
    public static void main(String[] args){
        int age=20;
        double cgpa=8.5;
        char grade="A";
        boolean passed=true;
        String name="Ram";

        System.out.println("Name: "+name);
        System.out.println("Age : "+age);
        System.out.println("CGPA : "+cgpa);
        System.out.println("Grade : "+grade);
        System.out.println("Passed : "+passed);
    }
}
```

Output:

```
java: incompatible types: java.lang.String cannot be converted to char
```

Question 5:

```java
class variableBasics{
    public static void main(String[] args){
        int age=20;
        double cgpa=8.5;
        char grade='A';
        boolean passed=true;
        String name="Ram";
        int age=20;

        System.out.println("Name: "+name);
        System.out.println("Age : "+age);
        System.out.println("CGPA : "+cgpa);
        System.out.println("Grade : "+grade);
        System.out.println("Passed : "+passed);
    }
}
```

output:

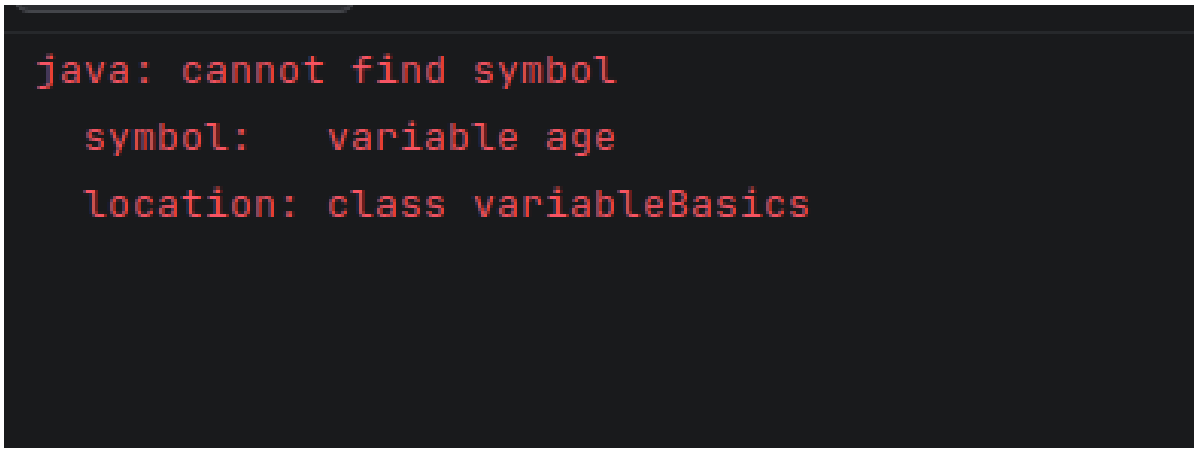
```
java: variable age is already defined in method main(java.lang.String[])
```

Question 6:

```java
class variableBasics{
    public static void main(String[] args){
        age=20;
        int age=20;
        double cgpa=8.5;
        char grade='A';
        boolean passed=true;
        String name="Ram";

        System.out.println("Name: "+name);
        System.out.println("Age : "+age);
        System.out.println("CGPA : "+cgpa);
        System.out.println("Grade : "+grade);
        System.out.println("Passed : "+passed);
    }
}
```

Output:

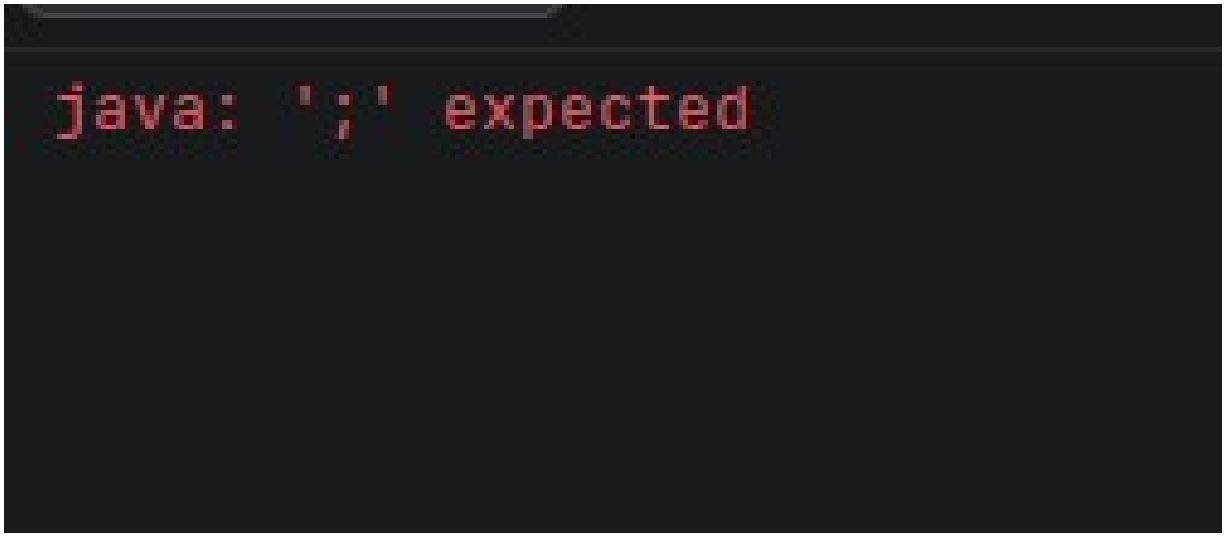


Question 7:

```
class variableBasics{
   public static void main(String[] args){
      int age=20;
      double cgpa=8.5;
      char grade='A';
      boolean passed=true;
      String name="Ram";

      System.out.println("Name: "+name);
      System.out.println("Age : "+age);
      System.out.println("CGPA : "+cgpa);
      System.out.println("Grade : "+grade);
      System.out.println("Passed : "+passed);
   }
}
```

output:

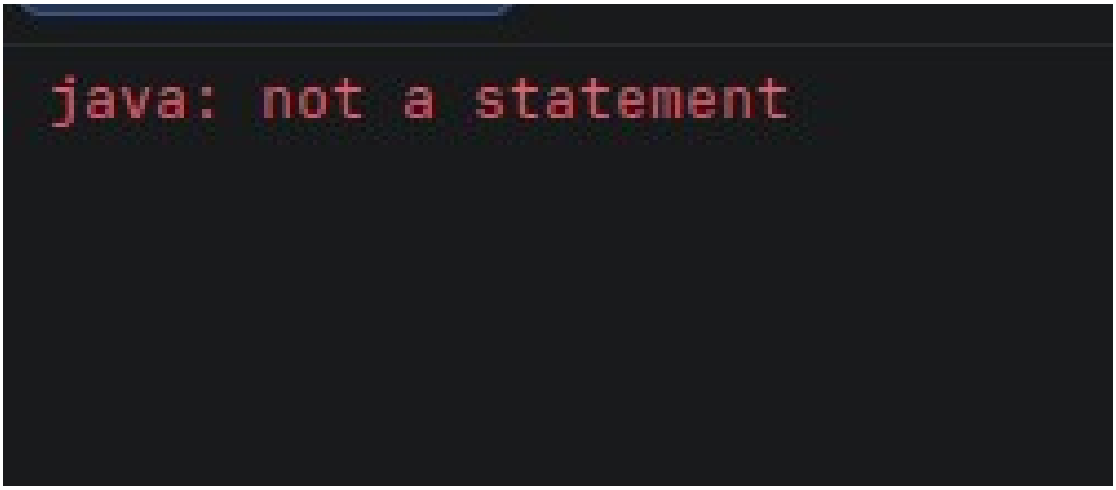


Question 8:

```
class variableBasics{
   public static void main(String[] args){
      int 123age123=20;
      double cgpa=8.5;
      char grade='A';
      boolean passed=true;
      String name="Ram";

      System.out.println("Name: "+name);
      System.out.println("Age : "+age);
      System.out.println("CGPA : "+cgpa);
      System.out.println("Grade : "+grade);
      System.out.println("Passed : "+passed);
   }
}
```

Output:



PART C

```
class variableBasics{
   public static void main(String[] args){
      int age=20;
      double cgpa=8.5;
      char grade='A';
      boolean passed=true;
      String name="Ram";
      int year=2;
      String department="CSE";


      System.out.println("Name: "+name);
      System.out.println("Age : "+age);
      System.out.println("CGPA : "+cgpa);
      System.out.println("Grade : "+grade);
      System.out.println("Passed : "+passed);
      System.out.println("Year : "+year);
      System.out.println("Department : "+department);
   }
}
```

Output:

```
/usr/java/jdk-17-oracle-x64/bin/java -ja
Name: Ram
Age : 20
CGPA : 8.5
Grade : A
Passed : true
Year : 2
Department : CSE

Process finished with exit code 0
```

Question 1

Ans: Variables in java are the named memory locations that store a certain type of value which can be used or changed during program execution.

Question 2

Ans:A variable must be declared before use so that the compiler knows its data type, memory requirements, and scope, ensuring type safety and preventing errors.

Question 3

Ans: If we don’t initialize a local variable it gives an error: ‘Compile-time error: variable x might not have been initialized’ . This compile time error occurs because local variables don’t have a default value, unlike instance or static variables.

Question 4

Ans: Java does not allow assigning text to int because its a statically typed programming language meaning the variable data types need to be specified, also java has strong type casting which prevents a variable of certain data types from storing values other than that data type specified, like example storing text in int.

Question 5

Ans: The first difference is that character is primitive data type and string is non primitive data type in java. Char stores single character while String stores a series of characters. Char is written/enclosed within single quotation (‘A’) while string is stored within double quotes (“Krish”). Char takes 2 bytes while Strings size depends on the length.

Question 6

Ans: Semicolon is important to terminate the line of code. It marks the end of a statement and tells the compiler that the instruction is complete.

Question 7

Ans: Redeclaration means declaring a variable with the same name multiple times within the same scope, which is not allowed in java and gives a compile time error ‘Error: variable a is already defined’

Question 8

Ans: Variables name invalid in Java are as follows:

1. int 123file; – name cant start with a number.

2. int @series; – name cant start with special characters except ‘_’ and ‘$’.

3. int ; - names cant be empty.

4. int total marks; - names cant have spaces in between.

5. int class; / int static; - names cant use keywords.

Question 9

Ans: One of the error I faced was due to assigning value to a variable before declaring a variable. The error message was ‘error: cannot find symbol’. In Java the data type of the variable must be known before assigning a value to the variable and store the value in the variable. Before declaration the variable does not exist in the memory. I fixed the error by assigning value to the variable after declaring it.