

```

import java.util.Scanner;

// Michael Cohen
// Chapter 3: Programming Challenge 12

public class SpeedOfSound
{
    public static void main(String[] args)
    {
        String medium;
        int air = 1100;
        int water = 4900;
        int steel = 16400;
        double distance;
        double time;
        Scanner keyboard = new Scanner(System.in);

        System.out.println("Enter one of the following mediums (air, water, or steel): ");
        medium = keyboard.nextLine();

        System.out.println("Enter the distance of the medium (in feet): ");
        distance = keyboard.nextDouble();

        if (medium.equals("air"))
        {
            time = distance / air;
            System.out.printf("It will take %f seconds to travel through the medium.\n", time);
        }
        else if (medium.equals("water"))
        {
            time = distance / water;
            System.out.printf("It will take %f seconds to travel through the medium.\n", time);
        }
        else if (medium.equals("steel"))
        {
            time = distance / steel;
            System.out.printf("It will take %f seconds to travel through the medium.\n", time);
        }
    }
}

```

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```

----jGRASP exec: java SpeedOfSound
Enter one of the following mediums (air, water, or steel):
steel
Enter the distance of the medium (in feet):
4100
It will take 0.250000 seconds to travel through the medium.
----jGRASP: operation complete.

```

```

import java.util.Scanner;
// Michael Cohen
// Chapter 3: Programming Challenge 13
public class MobileServiceProvider
{
    public static void main(String[] args)
    {
        char letter;
        double a = 39.99;
        double b = 59.99;
        double c = 69.99;
        int minutes;
        double total;
        Scanner keyboard = new Scanner(System.in);

        System.out.println("Which package do you have (A, B, or C): ");
        letter = keyboard.next().charAt(0);
        System.out.println("How many minutes were used this month: ");
        minutes = keyboard.nextInt();
        switch (letter)
        {
            case 'a':
            case 'A':
                if (minutes > 450)
                {
                    total = a + (0.45*(minutes - 450));
                    System.out.printf("Your total is: $%.2f \n", total);
                    break;
                }
                else
                {
                    total = a;
                    System.out.printf("Your total is: $%.2f \n", total);
                    break;
                }
            case 'b':
            case 'B':

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            case 'b':
            case 'B':
                if (minutes > 900)
                {
                    total = b + (0.40*(minutes - 900));
                    System.out.printf("Your total is: $%.2f \n", total);
                    break;
                }
                else
                {
                    total = b;
                    System.out.printf("Your total is: $%.2f \n", total);
                    break;
                }
            case 'c':
            case 'C':
                total = c;
                System.out.printf("Your total is: $%.2f \n", total);
                break;
            default:
                System.out.println("Invalid letter.");
        }
    }
}

```

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```

----jGRASP exec: java MobileServiceProvider
Which package do you have (A, B, or C):
A
How many minutes were used this month:
451
Your total is: $40.44
----jGRASP: operation complete.

```

```
import java.util.Scanner;

// Michael Cohen
// Chapter 3: Programming Challenge 17

public class WiFiDiagnosticTree
{
    public static void main(String[] args)
    {
        String response1;
        String response2;
        String response3;
        String response4 = " "; //Weird error if I didnt add " = ' ' "
        Scanner keyboard = new Scanner(System.in);

        System.out.print("Reboot the computer and try to connect. \nDid that fix the problem? ");
        response1 = keyboard.nextLine();
        if (response1.equalsIgnoreCase("yes"))
        {
            System.out.print("Good!");
        }
        else if (response1.equalsIgnoreCase("no"))
        {
            System.out.print("Reboot the router and try to connect. \nDid that fix the problem? ");
            response2 = keyboard.nextLine();
            if (response2.equalsIgnoreCase("no"))
            {
                System.out.print("Make sure the cables between the router & modem are plugged in firmly. \n");
                response3 = keyboard.nextLine();
                if (response3.equalsIgnoreCase("no"))
                {
                    System.out.print("Move the router to a new location and try to connect. \nDid that fix the problem? ");
                    response4 = keyboard.nextLine();
                    if (response4.equalsIgnoreCase("no"))

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            System.out.print("Reboot the computer and try to connect. \nDid that fix the problem? ");
            response1 = keyboard.nextLine();
            if (response1.equalsIgnoreCase("yes"))
            {
                System.out.print("Good!");
            }
            else if (response1.equalsIgnoreCase("no"))
            {
                System.out.print("Reboot the router and try to connect. \nDid that fix the problem? ");
                response2 = keyboard.nextLine();
                if (response2.equalsIgnoreCase("no"))
                {
                    System.out.print("Make sure the cables between the router & modem are plugged in firmly. \nDid that fix the problem? ");
                    response3 = keyboard.nextLine();
                    if (response3.equalsIgnoreCase("no"))
                    {
                        System.out.print("Move the router to a new location and try to connect. \nDid that fix the problem? ");
                        response4 = keyboard.nextLine();
                        if (response4.equalsIgnoreCase("no"))
                        {
                            System.out.print("Get a new router.");
                        }
                    }
                }
            }
        }
    }
}

```

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```

----jGRASP exec: java WiFiDiagnosticTree
Reboot the computer and try to connect.
Did that fix the problem? no
Reboot the router and try to connect.
Did that fix the problem? no
Make sure the cables between the router & modem are plugged in firmly.
Did that fix the problem? no
Move the router to a new location and try to connect.
Did that fix the problem? no
Get a new router.
----jGRASP: operation complete.

```