

Tutorial 2

1. **When defining a constructor, what do you specify for the type of the value returned?**

2. **Does every class in Java automatically have a default constructor? If not, when is a default constructor provided automatically by Java and when it is not provided?**

3. **Is it important to identify and define all of the methods that a class will contain during the early stages of problem solution design?**

4. **Consider a class `Time` that represents a time of day. It has attributes for the hour and minute. The hour value ranges from 0 to 23, where the range 0 to 11 represents a time before noon. The minute value ranges from 0 to 59.**
 - a. **Write a default constructor that initializes the time to 0 hours, 0 minutes.**

 - b. **Write a private method `isValid(hour, minute)` that returns true if the given hour and minute values are in the appropriate range.**

 - c. **Write a method `setTime(hour, minute)` that sets the time if the given values are valid.**

 - d. **Write another method `setTime(hour, minute, isAM)` that sets the time if the given values are valid. The given hour should be in the range 1 to 12. The parameter `isAm` is true if the time is an a. m. time and false otherwise.**

Hint: Partial code is given in the following page.

ZITE1102 – Programming Fundamentals

```

public class Time
{
    private int theHour;
    private int theMinute;

    // Creates a new instance of Time

    public Time()
    {
        ?
    }

    public Time(int hour, int minute)
    {
        setTime(hour, minute);
    }

    public Time(int hour, int minute, boolean isAM)
    {
        setTime(hour, minute, isAM);
    }

    private boolean isValid(int hour, int minute)
    {
        ?
    }

    public void setTime(int hour, int minute)
    {
        if (isValid(hour, minute))
        {
            ?
            ?
        }
    }

    public void setTime(int hour, int minute, boolean isAM)
    {
        if (hour >= 1 && hour <= 12)
        {
            if (isAM && hour == 12)
                // 12AM is 0 hours.
                ?
            else if (!isAM && hour < 12)
                // 8PM is 20 hours
                ?
            // The remaining hours are unchanged
            // 11AM is 11 hours, 12PM is 12 hours

            if (isValid(hour, minute))
            {
                theHour = hour;
                theMinute = minute;
            }
        }
    }
}

```