**2.7**. Fill in the blanks in each of the following statements:

**Comments** are used to document a program and improve its readability.

A decision can be made in a Java program with a(n) **integer**.

The arithmetic operators with the same precedence as multiplication are **division** and **modulo**.

When parentheses in an arithmetic expression are nested, the **innermost** set of parentheses is evaluated first.

A location in the computer’s memory that may contain different values at various times throughout the execution of a program is called a **variable**

**2.8** Write Java statements that accomplish each of the following tasks:

Display the message "Enter an integer: ", leaving the cursor on the same line.

Assign the product of variables b and c to the int variable a.

Use a comment to state that a program performs a sample payroll calculation.

**System.out.print("Enter an integer: ");**

**int a = b \* c;** // This program performs a sample payroll calculation.

**3.5** (Keyword new) What’s the purpose of keyword new? Explain what happens when you use it.

The keyword new in Java is used to dynamically allocate memory for an object at runtime. When you use the new keyword, it allocates memory on the heap for the object being created. The amount of memory allocated depends on the size and type of the object. Once memory is allocated, the constructor of the class associated with the object is called. This constructor initializes the object's state, sets default values, and performs any necessary setup. Then, the new keyword returns a reference to the newly created object. This reference is typically assigned to a variable, allowing you to access and manipulate the object through that variable.

**3.7** (Instance Variables) Explain the purpose of an instance variable.

The purpose of instance variables is to represent the state or characteristics of objects created from a class. They define the properties or attributes that describe the object's current state. Instance variables store data that is unique to each object and can have different values for different objects of the same class.

**4.12** Describe the two ways in which control statements can be combined.

There are primarily two ways in which control statements can be combined:

**Nested control statements** involve placing one control statement inside another control statement. This allows for the creation of more intricate decision-making structures. Nested control statements increase the complexity of the code but provide greater flexibility in handling various scenarios.

**Combined control statements** involve using logical operators (such as && for "and", || for "or", and ! for "not") to combine multiple control statements into a single decision-making structure. This approach allows for more concise code and can simplify the logic by expressing multiple conditions in a single statement.

**5.6** Compare and contrast the while and for iteration statements.

*‘while’* loops offer flexibility and are well-suited for situations where the number of iterations is not fixed, while *‘for’* loops provide a more structured approach when the number of iterations is known and when there is clear initialization, condition, and update logic. Choosing between them depends on the specific requirements and readability preferences of the programmer.