LAB EXERCISE

Q1 what is a Program?

A program is a set of instructions written in a programming language that a computer can execute to perform a specific task or solve a problem.

Q2 Write a simple "Hello World" program in two different programming languages of your choice. Compare the structure and syntax.

C

C Language program Hello World

```
#include <stdio.h>

int main()

{

 printf("Hello World\n");
return 0;
}
```

JAVA

Java Language Program Hello World

```
public class HelloWorld {

public static void main(String[] args) {

      System.out.println("Hello World");

          }
}
```

C Language Structure and Syntax

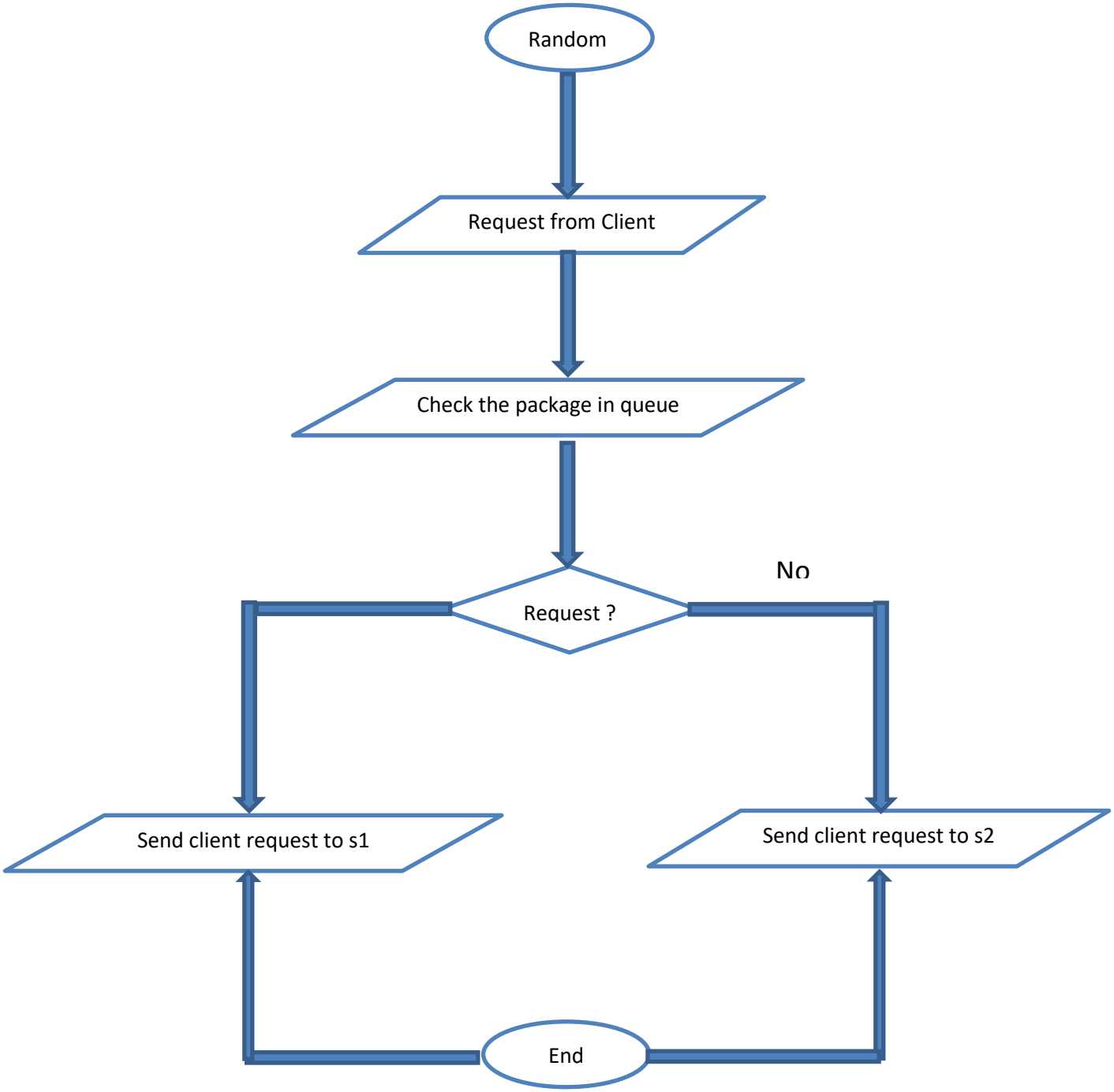
- Procedural language
- Case-sensitive (e.g., int ≠ Int).
- Statements end with ;

JAVA Language Structure and Syntax

- Fully object-oriented
- Case-sensitive (e.g., int ≠ Int).
- Statements end with ;

LAB EXERCISE

Q3 Research and create a diagram of how data is transmitted from a client to a server over the internet.



LAB EXERCISE

Q4 Research different types of internet connections (e.g., broadband, fiber, satellite) and list their pros and cons

**1.Broadhand**

a) Pros

- Always-on connection (no need to dial-up)
- supports multiple users/devices
- Enables fast downloads, streaming, and video conferencing

b) Cons

- Service quality varies by location and provider
- Installation and equipment may be needed

**2. Fiber**

a) Pros

- High speed: Transmits data at the speed of light.
- Large bandwidth: Supports more data than copper cables.

c) Cons

- Expensive installation: Higher initial cost compared to copper.
- Fragility: More prone to physical damage and breakage.

**3. Satellite**

a) pros

- No physical infrastructure required.

b) Cons

- High latency (delay).
- Affected by weather.

LAB EXERCISE

Q5 Identify and classify 5 applications you use daily as either system software or application software

a) System Software

- Linux Kernel System Software
- Docker

b) Application Software

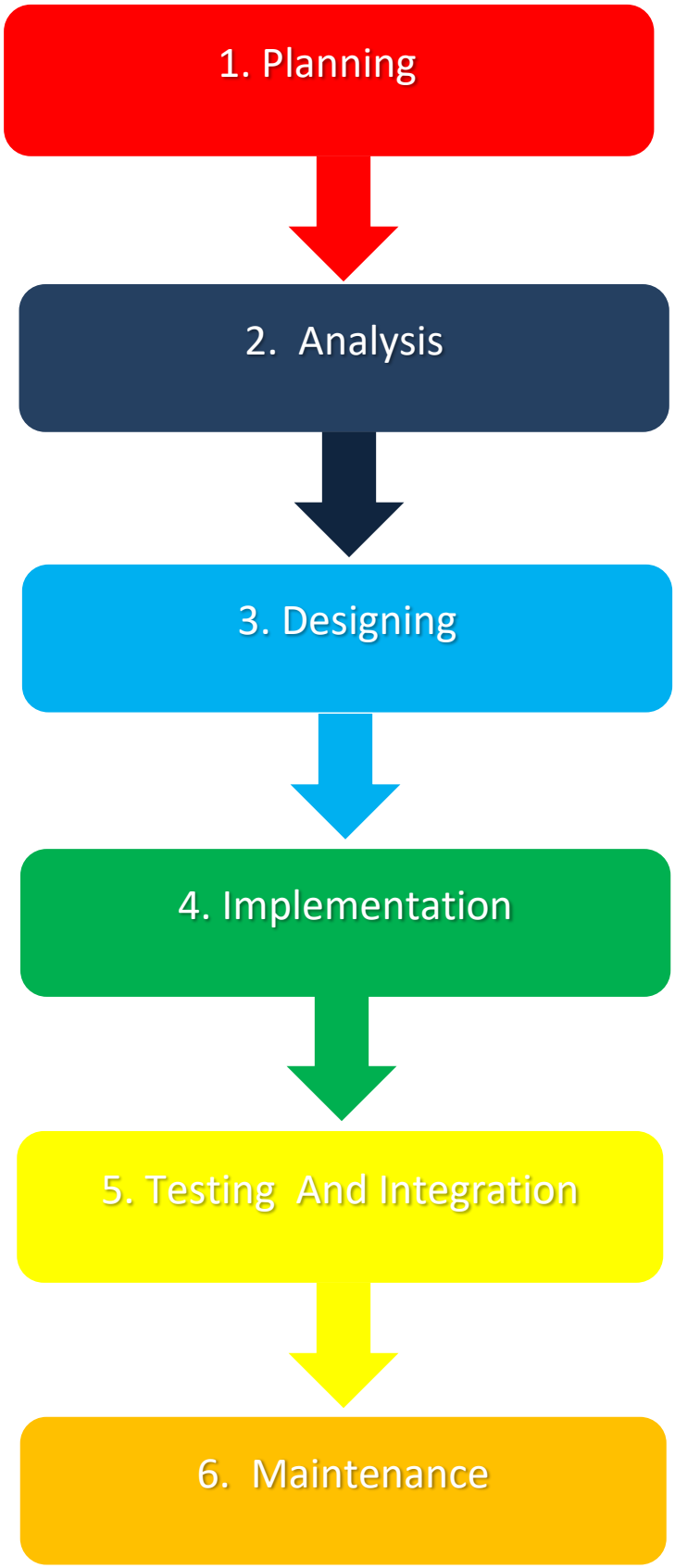
- Python
- Web Browser
- PostgreSQ
- Dev C++
- Visual Studio

Q6 categories: system, application, and utility software.

| **System Software** | **Application Software** | **Utility Software** |
|---|---|---|
| Operating systems | Microsoft Word | Antivirus (Vast) |
| Device Driver | Chrome, Mozilla | WinRAR |
| firmware | Adobe Photoshop | disk cleanup |

LAB EXERCISE

Q7: Create a flowchart representing the Software Development Life Cycle (SDLC).



LAB EXERCISE

Q8 Develop test cases for a simple calculator program

```
#include<stdio.h>
Int main()
{
        Int no1,no2;
        Char  ch =’%’;
        Char choice;
        Up:
        Printf(“\n Enter the No1=”);
        Scanf(“%d”,&no1);
        Printf(“\n Enter the No2=”);
        Scanf(“%d”,&no2);
        Printf(“\n Press ‘+’ For Addition”);
        Printf(“\n Press ‘-’ For Subtraction”);
        Printf(“\n Press ‘*’ For Multiplication”);
        Printf(“\n Press ‘/’ For Division”);
        Printf(“\n Press ‘%c’ For Remainder”,ch);
        Printf(“\n Enter Your Choice”);
        Scanf(“%d”,&choice);
        ----------------------------------------------------------------------------------------------------------------------------------
        Switch(choice)
        {
                Case ‘+’:
                        Printf(“\n Addition of %d and %d is = %d”,no1,no2,no1+no2);
                Break;
                Case ‘-‘:
                        Printf(“\n Subtraction of %d and %d is = %d”,no1,no2,no1-no2);
                Break;
                Case ‘*’:
                        Printf(“\n Multipliicatiion of %d and %d is = %d”,no1,no2,no1*no2);
                Break;
                Case ‘/’:
                        Printf(“\n Division of %d and %d is = %d”,no1,no2,no1/no2);
                Break;
                Case ‘%’:
                        Printf(“\n  Remainder of  %d and %d is =%d”,no1,no2,no1%no2);
                Break;
        }
        ----------------------------------------------------------------------------------------------------------------------------------
        Printf(“\n Enter ‘ Y ‘ To Continue and ‘ N ‘ To Exit =”);
        Scanf(“%d”,&choice);
        if(choice==’ y ‘ || choice==’ Y ’);
        {
                Goto up;

        }
        Return 0;  }
```