



Executing Pictures as Programs

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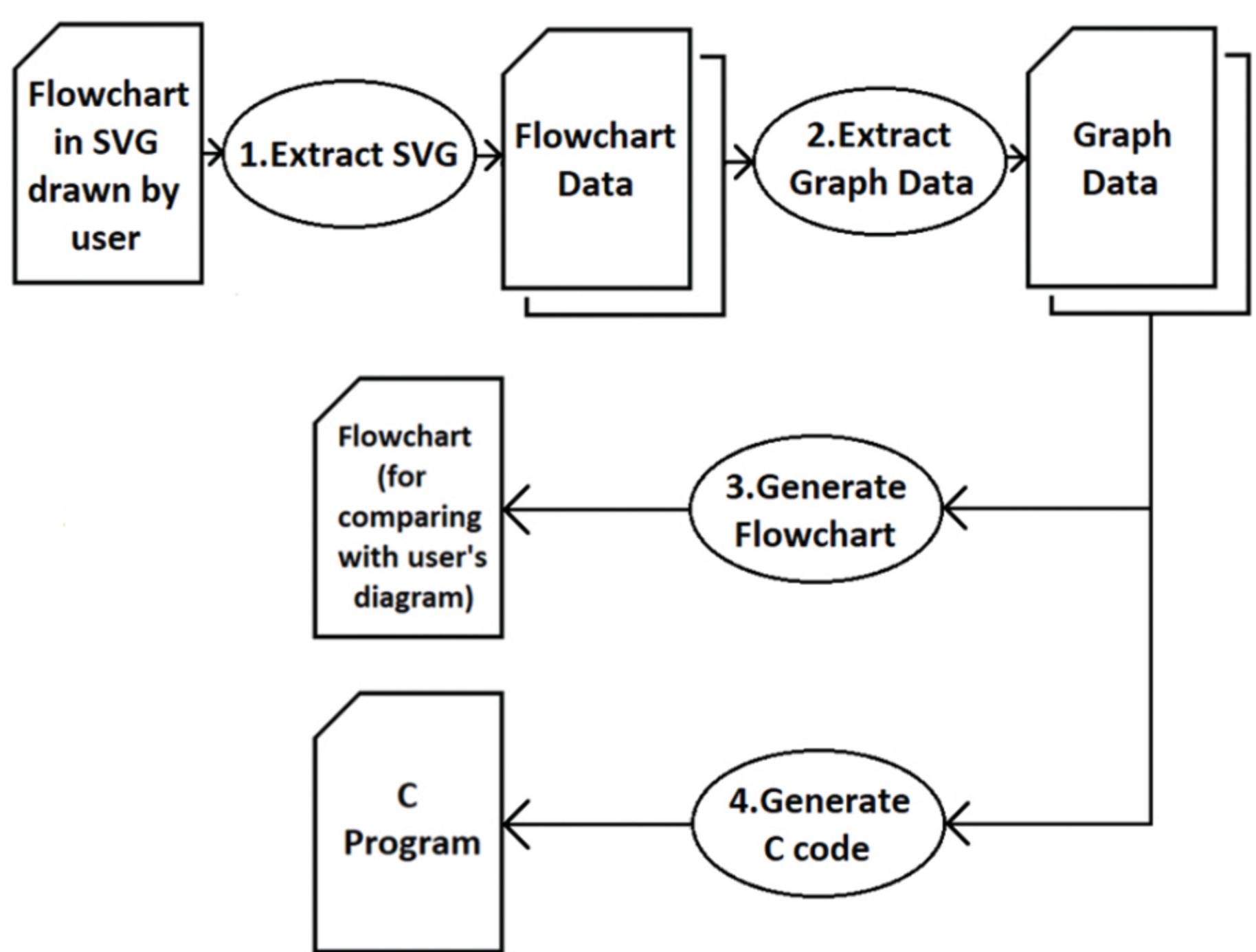
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Summary

"Executing Pictures as Programs" extracts flowcharts (or Nassi - Shneiderman diagrams) drawn using SVG (Scalable Vector Graphics). The JGraphT library is used to analyze the SVG information to generate a graph, which is then converted into C code, and drawn as a new flowchart using JGraphX.

Processing Stages

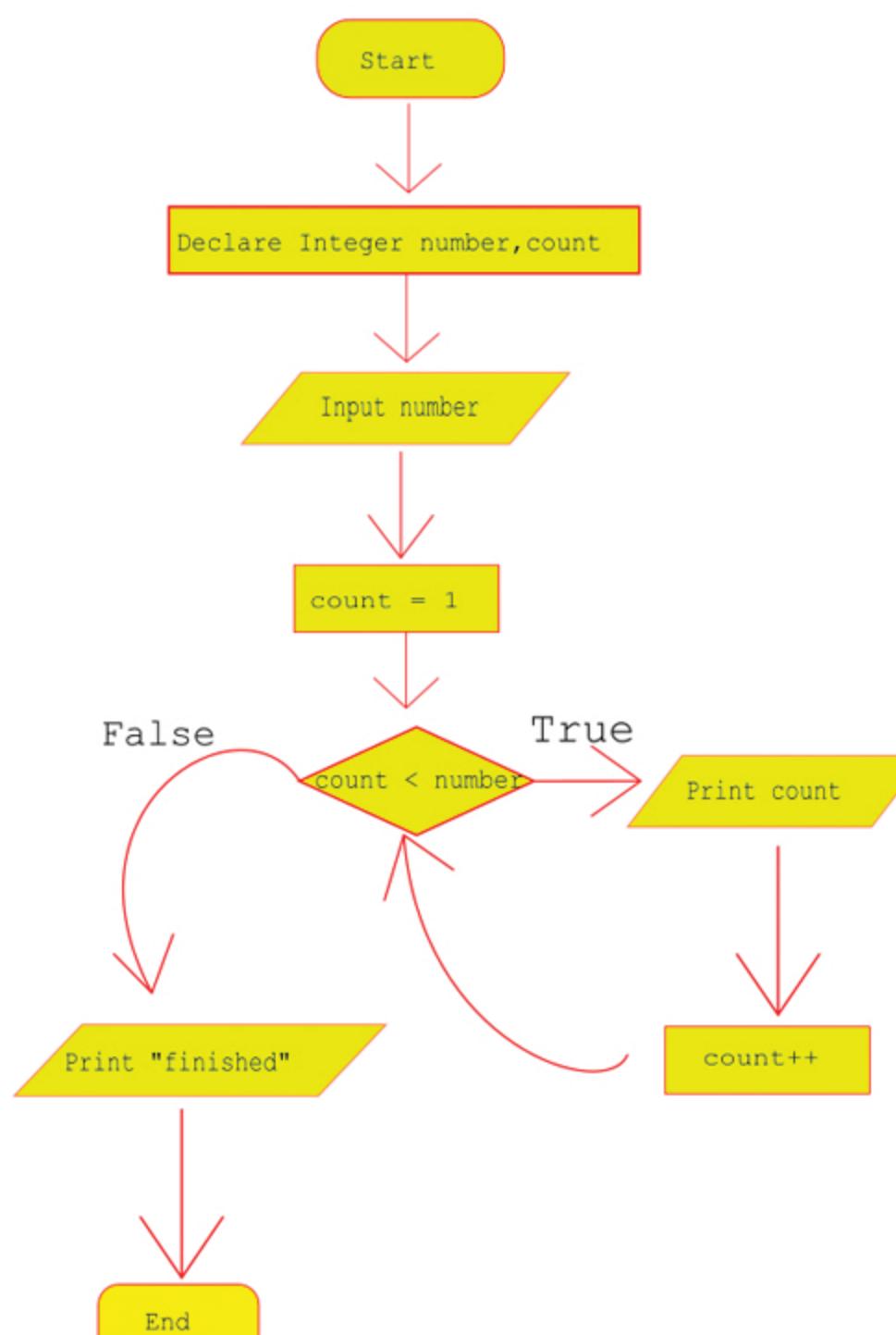


Two Program Examples

1. printAllNumbers.c

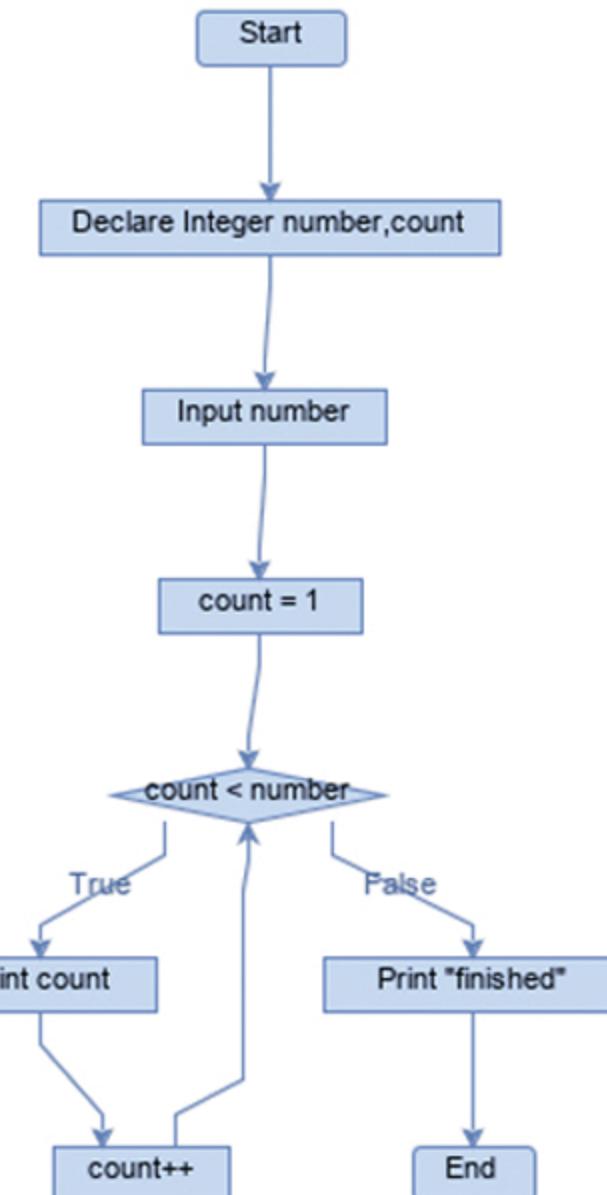
Gets a number from the user, and print all numbers from 1 to the selected number.

1. User's Inkscape drawing



2. Extract Graph Data

3. Flowchart Generated



4. C Code Generated

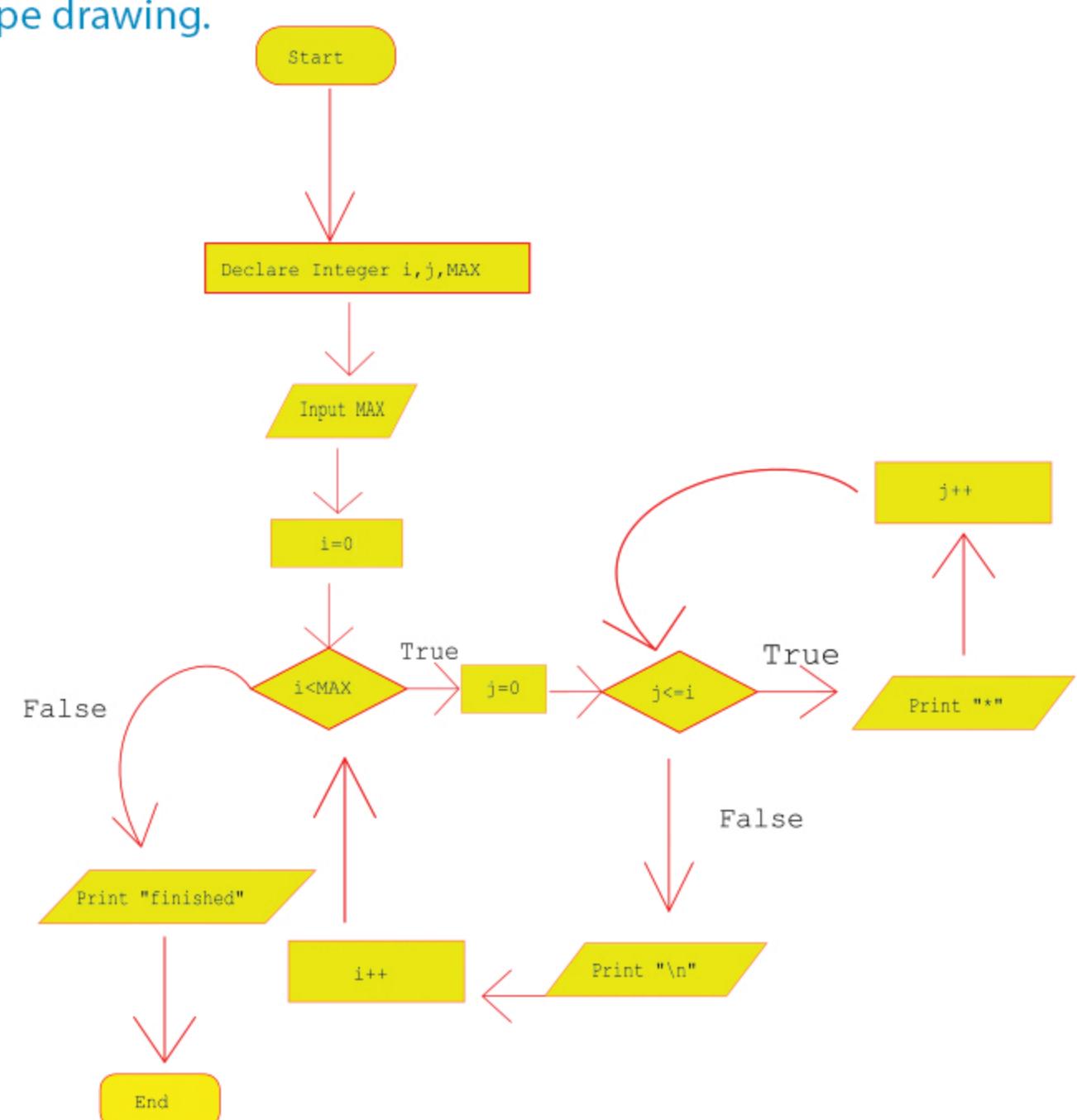
```

main() {
    int number, count;
    scanf("%d", &number);
    count = 1;
    while(count < number) {
        printf("%d", count);
        count++;
    }
    printf("finished");
}
  
```

2. printTriangleStar.c

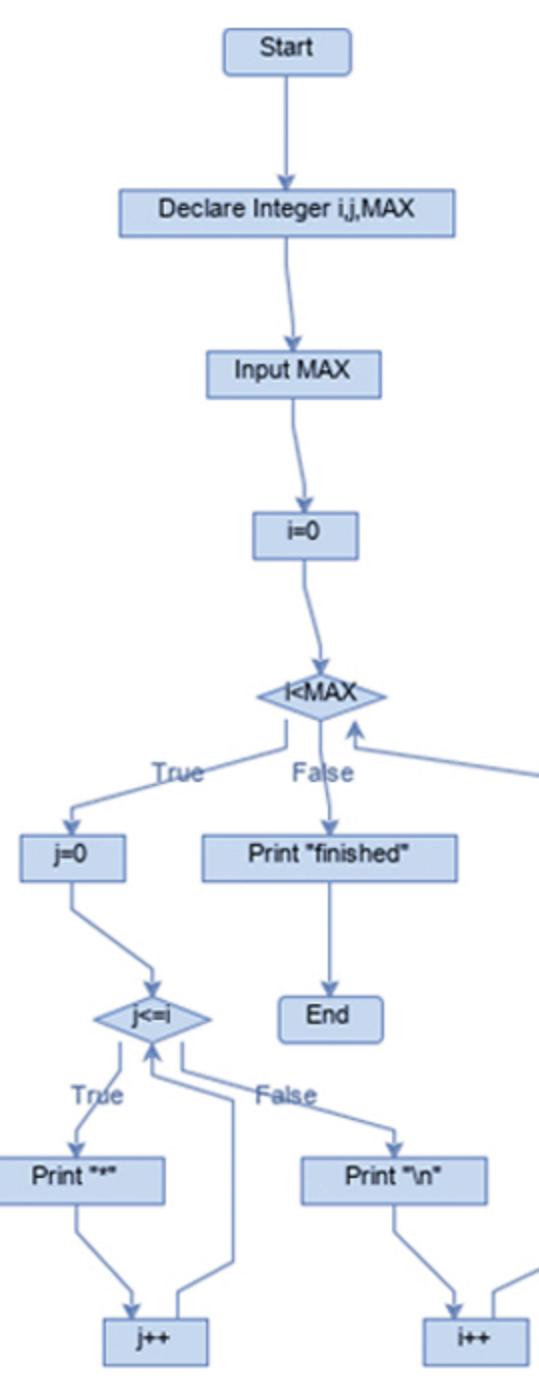
Gets a number from user, and print a pattern triangle.

1. User's Inkscape drawing.



2. Extract Graph Data

3. Flowchart Generated



4. C Code Generated

```

main() {
    int i,j,MAX;
    scanf("%d", &MAX);
    i=0;
    while(i<MAX) {
        j=0;
        while(j<=i) {
            printf("*");
            j++;
        }
        printf("\n");
        i++;
    }
    printf("finished");
}
  
```

Tools Used



Java graph library that provides graph-theory objects and algorithms.



Graph diagramming using Java Swing.



SVGsalamander
A light weight SVG renderer.



Inkscape
+Shape Creator extension
Drawing tool for SVG.

Conclusions

- Users can draw flowcharts which are automatically analyzed and converted into C code.
- More work is needed to improve the C code quality, and to cover more Flowchart symbols (e.g. subroutines).