

SCRATCH – Nothing to Sniff At: Six Loops Implemented in SCRATCH

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ABSTRACT

Any programming language used has to compromise the many characteristics that make it ideal for the beginner. One of the most desirable features is providing engagement for the novice. Without this, other features are irrelevant; they will not be experienced once the course is abandoned.

MIT's Scratch programming tool (<http://scratch.mit.edu>) has been used extensively to inject some fun into the business of teaching programming to novices. At CPIT (cpit.ac.nz) Scratch is used as an introduction to programming as part of the three year Bachelor's degree.

KEYWORDS

Introduction, Programming, SCRATCH, loop constructs, Java.

INTRODUCTION

Mordechai Ben-Ari's article in *Inroads* (2011 March, Vol .2 No.1) earlier last year compared Scratch's loop constructs with other, mainstream programming languages such as Java. The article claimed they were unable to match those offered in languages such as Java.

METHODOLOGY

Engagement alone however, e.g. without the ability to capture programming essentials, would also be useless. This poster aims to show that function indeed follows form in the Scratch world and responds to criticisms of Scratch's handling of loops. To do this, the six looping constructs set out in Astrachan and Wallingford's Loop Patterns (<http://www.cs.duke.edu/~ola/patterns/plopd/loops.html>) [1] were each implemented as Scratch programs, code clips of which one is shown below (the remainder are contained in the poster).

CONTENT

One of the loop patterns mentioned in Astrachan and Wallingford's Loop Patterns [1] was the 'Polling Loop'.

How do you poll until the user enters a valid data item?

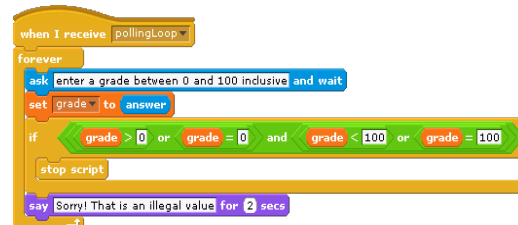
The code *could* be written as:

```
while (1)
{
    cout << "Enter a grade between 0 and 100, inclusive: ";
    cin >> grade;

    if (grade >= 0 && grade <= 100)
        break;

    cout << "Sorry! That is an illegal value." << endl;
}
```

The code would be written in Scratch as:



CONCLUSION

The poster shows that complex loop structures that can be written in the traditional scripting languages such as Java can also be written in Scratch. No attempt has been made to compare the amount of Scratch code required or the ease of building that code as compared to a language such as Java, only the fact that this can be achieved. The immediate benefit for the beginning student is the safety of building the logic from predefined 'drag and drop' blocks of code and the visual impact given by this code as an aid to understanding how and why the solution works.

REFERENCES

[1] Astrachan and Wallingford (1998). Loop Patterns . Retrieved from (<http://www.cs.duke.edu/~ola/patterns/plopd/loops.html>) on 11/11/2011.

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