A Solution to the Square-Rectangle Problem Within the Framework of Object Morphology

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# Introduction

Square-Rectangle Problem (SRP) description and OOP, one of a couple of OOP problems (expression problem, glass elephant problem)

LSP, its importance and role

What is LSP, a foundation stone of OOP, SOLID …

More details about LSP

Violations of LSP

Some solutions (briefly, mostly citations)

The gap in the solutions, they try to cope with the problem in the framework of the current OOP paradigm, which often leads to re-formulation or narrowing of the problem, or they resort to hacks [citations]

The problem vanishes when examined within the framework Object Morphology, a short description of OM and the method

A new of view on objects as mutable, multi-form entities, which may migrate from one morph model (concept) to another, a morph model = a temporary conceptual habitat of objects

# Literature review

Describe and comment the methods mentioned on WIKI

# Solution

## Object Morphology overview

## Problem analysis

The basic model, a cuboid as a special case of rectangle

R = Rectangle . (1 | Square)

A segment as a special kind of rectangle/square model, a dot as a special kind of segment

C = Cuboid . (1 | Cube | R)

A segment as a special kind of ellipse, circle as ellipse, ellipse as a special kind of cylinder

S = Segment . (1 | Point)

R = Rectangle . (1 | Square) . (1 | Segment.(1 | Point))

Morph migration across various models via morph references, preserving the identity

E = Ellipse . (1 | Circle) . (1 | Segment.(1 | Point))

Path dependency: the segment keeps a track of its history encoded in the hidden fragments. Even when it moves to the other morph model it is still connected with the fragments from the original model.

## Design and implemenation

Morpheus code

# Results and Discussion

# Conclusion

# General information and styles

**This template is intended only for the contribution written in English! For Czech or Slovak written contribution, use the appropriate template.** Please use the following predefined formatting styles (Heading 1, Heading 2, main text, etc.) in this template.

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* Introduction
* Literature review and research methods
* Solutions and Results
* Discussion
* Conclusion
* Acknowledgement
* References

Parts can be structured into multiple subsections.

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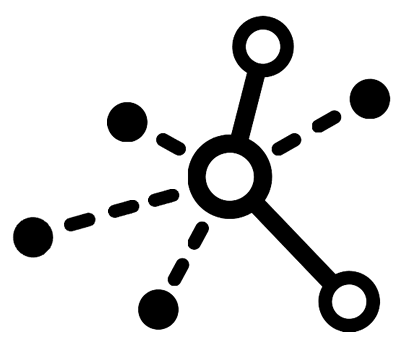
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## Figure

All figures and tables must be centred and formatted according to the following examples.



**Fig. 1.** Caption for the captions of figures. Source (Berg, 2014, p. 57).

## Table

|  |  |  |
| --- | --- | --- |
| **AAA** | **BBB** | **CCC** |
| Aaa1 | Bbb1 | Ccc1 |
| Aaa2 | Bbb2 | Ccc2 |
| Aaa3 | Bbb3 | Ccc3 |
| Aaa4 | Bbb4 | Ccc4 |

**Tab. 1.** Caption for the captions of tables. Source (Berg, 2014).

## Source Code

#include <iostream>

using namespace std;

#define PI 3.14

int main ()

{

double r=4.0; // radius

double circle;

circle = 2 \* PI \* r;

cout << circle;

return 0;

}

## Equation

|  |  |
| --- | --- |
|  | **(1)** |

To create equations use the integrated editor "Equation editor" in MS Word. Equation insert in invisible table and each equation should be numbered.

# References

The contribution should primarily refer to the relevant scientific journals and conferences that are indexed in the Web of Knowledge and Scopus. References have to be **alphabetically sorted.** For links to references in the text, use the following examples using the author's surname and year of publication:

* **1 author** – Berg (2014, pp. 55-57) pointed out the problem… The problem is well-known (Magel, 2013a, p. 47) and further expanded in other papers (Lateg, 2013; Margel, 2013b; Apple, 2012).
* **2-3 authors** – Joergen a Jones (2009) improved used methods… Nevertheless in practice is used CUW method (Kang, Tucin & Kent, 2002).
* **More than 3 authors** – Skálová et al. (2010) provide the solution… The solution already exists (King et al., 2014).

**Examples of list of references**

To cite sources in the part of **References** use APA style (6th edition). The tutorial can be found here: <http://www.apastyle.org/learn/tutorials/basics-tutorial.aspx> In case of problems or doubts, we recommend to use a generator for APA citations on the internet. Below are examples of the most commonly used sources:

***Book:***

Berg, S. (2014). *Services marketing management*. London: Routledge.

Magel, J. (2013a) *Mastering data mining*. (1st ed.) Stockholm: Stockholm School of Economics.

Magel, J. (2013b) *Mastering GUHA. Stockholm*: Stockholm School of Economics.

***Article in journal:***

Joergen, P., & Jones, K. (2009). Random data analysis and measurement procedures. *Journal of Systems Integration*, 5(2), 55-85. Retrieved from <http://si-journal.org/joergen-jones-2009.pdf>

Kang, O., Tucin, J., & Kent, K. (2002). CUW methodics for marketing management. *Journal of Information Management*, 54(3), 1502-1535. doi: 10.7160/jim.2002.06784

***Article in other periodical (newspaper):***

Lateg, R. (2013, March 25). A survey of data provenance in e-science. *New York Review*, pp. 8-11.

***Conference contribution or chapter of the book:***

Skálová, U., Hopstal, H., Kuruc, T., & Krebs, W. (2010). The role of anomalous data in knowledge acquisition. In J. Jicinsky & P. Trejbal (Eds.), *5th International Conference on Informatics* (pp. 248-310). Kaunas: Walter Verlag.

King, U., Smith, L., Jones, E., Kain, W., & Wright, V. (2013). Power-law distributions in empirical data. In J. Rais (Ed.), *The design and analysis of spatial data structures* (1 ed., pp. 45-122). London: Research Life.

***Reference to the web page or e-document:***

Anders, Q. (2014, April 12). *Most-trusted brands*. Retrieved from <http://googleblog.blogspot.cz/anders-brands-2014>

Apple. (2012). *CFNetwork Programming Guide*. Retrieved from <https://develo-per.apple.com/library/mac/documentation/Networking/Conceptual/CFNetwork/CFNetwork.pdf>.