This is where your title belongs

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Abstract. This is an abstract. Here, you have to explain what this article is about. In particular, the problem that you are tackling and the benefits that you achieve by solving it.
Generally, a good structure for explanations is to explain the "why" first, then the "what", and later continue with the "how". Note that this applies to a paper, as well as to all its sections, paragraphs and sometimes even to sentences.
The whole template is based on the llncs springer latex template[1].

Keywords: Template, Seminar

1 Introduction

- Introduce the research area of your topic. Why are particular tasks difficult or what are some general problems in this field and why would it be nice to solve them?
- Often, it makes sense to provide an overview about the related work/literature in the introduction.
- Explain what your solution or contribution is, but do not go into details. That's what the rest of the paper is for.
- Give a brief outline of the rest of your paper like the one below.

The rest of this section, starting with Section 1.1, contains examples for structuring section and referencing them. In Section 2 we give an example of how code can be visualized and how figures can be added to a latex document. Examples for definition, proof or other mathematical environments are provided in Section 3. The other sections are empty.

1.1 This is a Second-Order Title

This is a Third-Order Title.

This is a Fourth-Order Title.

[1] available at www.springer.com

2 Your Background Section

Sometimes you will have to place figures. The simplest way of doing it is shown in Figure 1. If you want to show two figures next to each other, then use a minipage environment is shown in the Figures 2 and 3. Note that the lstlisting environment that was used for the code visualization provide highlighting of different programming languages (see C++ in Fig. 4), but can also be customized (see Fig. 2).

TODO: You can use the todo command to highlight TODOs in your report. They will be shown like this one. Don't try to read the rest of this section ;-)

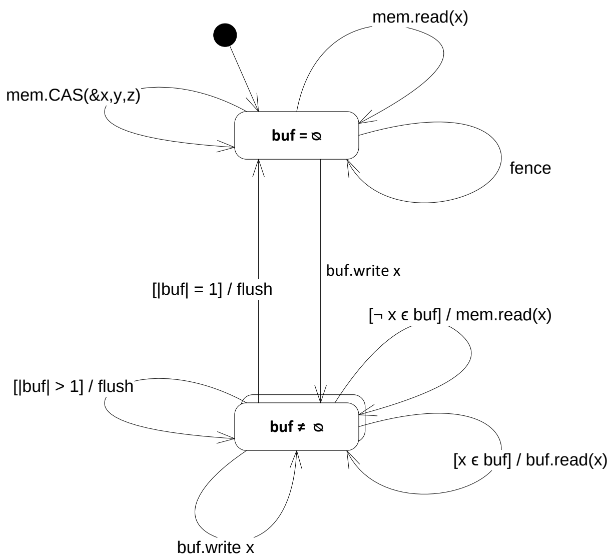

Fig. 1. Some figure

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```
define i32 @popBottom() nounwind {
entry:
  %0 = load i32** @bot
  %1 = load i32* %0
  %cmp = icmp eq i32 %1, 0
  br i1 %cmp, label %return, label %if.end
...
return:
  %retval.0 = phi i32 [ -1, %entry ], ...
  ret i32 %retval.0
}
```

Fig. 2. Some code displayed as a figure

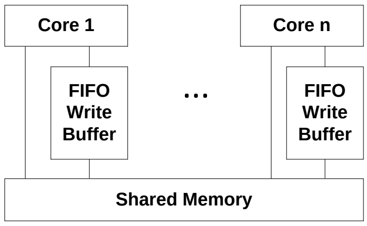

Fig. 3. Some figure

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```
unsigned int *bot;
int *age, *deq;

void pushBottom(int elem){
    unsigned int localBot = *bot;
    deq[localBot] = elem;
    localBot++;
    *bot = localBot;
}

int popTop(){
    int oldAge = *age;
    unsigned int localBot = *bot;
    if (localBot <= (oldAge>>16))
        return NULL;
    int elem = deq[oldAge >> 16];
    int newAge = oldAge;
    newAge = (((newAge >> 16) + 1) << 16)
        | (newAge & 0xFFFF);
    if (CAS(age, oldAge, newAge))
        return elem;
    return ABORT;
}
```

```
int popBottom(){
    unsigned int localBot = *bot;
    if( localBot == 0)
        return NULL;
    localBot--;
    *bot = localBot;
    int elem = deq[localBot];
    int oldAge = *age;
    if ( localBot > (oldAge >> 16))
        return elem;
    *bot = 0;
    int newAge = (0 << 16)
        | ((oldAge & 0xFFFF) + 1);
    if (localBot == (oldAge>>16)){
        if (CAS(age, oldAge, newAge))
            return elem;
    }
    *age = newAge;
    return NULL;
}
```

Fig. 4. Here is the C++ code of the work stealing queue by Arora et al. [1] as an example for how you can present code.

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3 Concept Section

Here, you have some examples for different environments and a lot of Lorem ipsum...

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Proposition 1. *For any* $n \in \mathbb{N}$, $\sum_{i=1}^{n} i = \frac{n(n+1)}{2}$

TODO: Dont' forget to cite your source. This proof comes from a website[2]

Proof

Base case $n = 1$: $\frac{1(2)}{2} = 1$. ok!
Induction step $n = k + 1$.

$$\sum_{i=1}^{k+1} i = (k+1) + \sum_{i=1}^{k} i \tag{1}$$
$$= (k+1) + \frac{k\,(k+1)}{2} \tag{2}$$
$$= \frac{2\,(k+1)}{2} + \frac{k\,(k+1)}{2} \tag{3}$$
$$= \frac{2\,(k+1) + k\,(k+1)}{2} \tag{4}$$
$$= \frac{(k+1)\,(k+2)}{2} \tag{5}$$

□

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Definition 1. *Let 2 be an odd number . . . :-)*

Theorem 1. *Let P be a program of a thread t. ... then it might be deadlock-free or correct in sone sense.*

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4 Related Work

5 Conclusion

References

[1] Nimar S. Arora, Robert D. Blumofe, and C. Greg Plaxton. Thread Scheduling for Multiprogrammed Multiprocessors. In *Proceedings of the Tenth Annual ACM Symposium on Parallel Algorithms and Architectures*, SPAA '98, pages 119–129, New York, NY, USA, 1998. ACM.

[2] Brandon Grasley. A sample proof using mathematical induction (playing with latex). http://bgrasley.wordpress.com/2014/01/21/a-sample-proof-using-mathematical-induction-playing-with-latex/, November 2014.