

Functional Programming

- Exercises are given every week on the PL page of the SCG website (<http://scg.unibe.ch/teaching/pl>)
- Solutions to each assignment must be sent to **mohammadreza.hazhirpasand@inf.unibe.ch**
- The solutions of the assignments are to be delivered before every Thursday at 5 PM. Solutions handed in later than the specified time will not be accepted. In case of serious reasons send an e-mail to **mohammadreza.hazhirpasand@inf.unibe.ch**

Exercise (6 points)

- Explain why the following piece of code does not raise an error. (1 pts)

```
func1 5 z = 33  
func1 y z = y  
func1 50 (sqrt(-5))  
– output is 50
```
- Define the following small program in three different functions with pattern matching, guards, and lambda expression. (1.5 pts)

```
if n = 0 then  
return -1  
else  
return n * 2
```
- Define a function that accepts a list as an argument and returns the sum of all the members of the given list. (1.5 pts)

- Define a function `firstNCatalan n` in Haskell that calculates and returns the result as a list containing the first n **Catalan numbers**. Catalan numbers are calculated based on the formula

$$C_n = \frac{(2n)!}{(n+1)n!}, n \geq 0. \text{ (2 pts)}$$