CS_191 Functional Programming I

Coursework 1

Due date: Thursday, 3rd of March 2011

Submission in pairs

Pizzeria Alfredo sells pizzas of varying sizes and numbers of toppings. They would like to have a program that computes the selling price of a pizza. The pizza base costs £ 0.001 per cm^2 and the cost for each topping is £ 0.002 per cm^2. In order to make profit, they multiply the cost of a pizza by a factor of 1.5.

Question 1. Write a function `alfredo` that takes as inputs the diameter (in cm) and the number of toppings of the pizza, both given as integers, and calculates the price of the pizza as a floating point number. Diameters must be between 10 and 100 cm and the numbers of toppings must be between 1 and 10. The program should reject inputs outside these ranges.

[**60 marks**]

Question 2. Write a function `menu` that takes as inputs the name of a pizza (given as a string), the diameter and the number of toppings of the pizza, both given as integers, and computes an entry in the menu for that pizza (as a string).

For example,

`menu "Diavolo" 32 4`

should yield the string

`"Pizza Diavolo costs 10 pounds and 86 pence"`

No fractions of pennies should be shown. The program should also avoid writing something like `"0 pounds"` or `"0 pence"`.

The function `menu` should call the function `alfredo` from Question 1.

[**40 marks**]

All functions must be defined in Haskell, must have a signature and **must be tested**. **Tests must be shown as comments in the script**. For the script use the **template file** provided at the course web page. The script must contain **both authors' names and student numbers** at the beginning.

Please submit a **printout** with a **submission slip attached** in the **wooden box on the 2nd floor** next to the students office. The submission slip must be **signed by both authors of the coursework**. Submissions by a single author will accepted, but it is strongly recommended to work in pairs.