Haskell Report

Reddi Hareesh 150101051
Irala Dilip Kumar 150101027

Question 01)

1) 2 functions namely main and func_min
2) the main function is impure because of the input-output and the other function is pure
3) There are side effects for main as we have used input-output for it
4) We can use the impure functions in Haskell Language to create side effects as we can print the variable values at the end and also to change the state of the function variables.

Question 02)

1) 2 Functions were used to write the program.
They are **main** and **wrapper** functions. The **main** function takes inputs of initially present money, cost of each aloo paratha and the number of tokens required to make an aloo paratha. The **wrapper** function calculates the number of additional aloo parathas Chhotu can obtain by using the tokens obtained. The **main** function prints the answer as **-1** if the token value is 1 and the number of initial aloo parathas is more than 0 as we can reuse the tokens to buy aloo parathas. Otherwise, the main function prints Number of aloo parathas Chhotu can obtain by calling wrapper function.
2) **Yes**, wrapper function used to write the program is Pure as there is no variable which is assigned and main is impure as it takes input/output using library functions.

Question 03)

1)We need to consider the Worker with **Highest** Salary during any operation as the salary of no other worker should not exceed the Worker with Highest salary.
2) 5 Functions were used to write the program.
They are::
main which takes inputs of Number of Workers and Their corresponding salaries and prints the Minimum Number of Operations to be performed to equalize all the salaries.
getSum, **getLength** and **getMin** functions which obtain the sum of all values in the list, length of the list and the minimum value in the list respectively.
wrapper function which uses previous 3 functions to calculate the answer also it is called my main function to get the answer.
3) the main function is impure as it takes input/output using library functions and other functions are pure as there is no state change for the variables in the process of execution.

Question 04

Pseudo Code

Input : maximum_area number_of_beds number_of_halls

Output : Dimensions of each of the rooms which form a maximum area that is less than or equal to the maximum area possible

Algo :

1. create a list of tuples of all possible configurations for the rooms
2. create a list and store them and their area possible by this configuration and if this area is less than the maximum area possible then the other rooms dimensions are also calculated
3. find the tuple with the maximum area and return its configuration

2. How many functions you have used?

A) 3 functions are implemented

3.Area all those pure?

A) design and combination are impure

4. If not? why?

A) because they have IO in them they are impure and other functions are pure.

Short notes on the report:

Yes, the lazy evaluation feature of Haskell can be used to improve the running time of programs. This behaviour is not observed in the case of imperative languages.

Yes, it is helpful to use Haskell for many of the problems. Because not having side effect means that the functions will give the same output every time it is called. This also makes it simple ans easy to check the validity of a function.