MAT013 - Example Sheet

SAS: Chapter 5

- 1. Re-produce the SAS code from the notes:
 - Using proc sql, create a copy of the MMM and JJJ data sets, including all the variables.
 - 2. Using proc sql, create the previous copies selecting just the variables, Name, Age, Sex, random number, as well as the bmi of the observations.
 - 3. For the following data set:

```
Var1, Var2, Var3, Var4, Var5
A, 1, A, 2, B
A, 1, A, 2, B
B, 1, A, 1, C
C, 2, B, 2, D
C, 2, C, 1, E
```

- 4. Create a copy of the data set removing complete duplicate rows.
- 5. Create a copy of the data set removing duplicates of Var2.
- 6. Create a copy of the data set removing duplicates of Var3 and Var4.
- 7. Create a copy of the data set selecting only observations where Var2 > Var4.
- 8. Create a copy of the data set ordering by Var1.
- 9. Create a data set containing the mean, std, max, min and variance of Var4 and Var2 by Var1.
- 10. Download the data sets dogs.csv and cats.csv use proc sql to:
 - 1. create an inner join.
 - 2. a left outer join.
 - 3. a right outer join.
 - 4. a full outer join.
- 11. Create a new function entitled "Gsum" and compute the geometric sum $\sum_{k=0}^{n} i^k$ for the following data set:
 - n,i
 - 1,1
 - 2,1
 - 3,2
 - 4,2
 - 5,2
 - 6.2
- 12. Minimise the function $x^2 x 2y xy + y^2$.

- 13. Minimise the above function for $x \leq 0$ and $y \geq 2$.
- 14. Solve the following optimisation problem: Maximise: $f(x_1, x_2, x_3) = x_1 + x_2 + x_3$ subject to:

$$x_1, x_2, x_3 \ge 0$$

$$3x_1 + 2x_2 - x_3 \le 1$$

$$-2x_1 - 3x_2 + 2x_3 \le 1$$

The relevant data can be found here:

- \bullet dogs.csv
- cats.csv