

Herk. 2

## Midterm Exam

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### 1 Exercise 1

Write a fortran program according to the following specifications:

1. (1pt) declare an allocatable real array `geodatas`
2. (1pt) read from the standard input the number `N`
3. (1pt) allocate the arrays `geodatas` and `geodatas2` to size `N`
4. (1pt) fill the array with random numbers
- 1/2 5. (1pt) write on the standard output the minimum and maximum values of `geodatas`
- 1 6. (1pt) write in file `values.dat` the numbers stored in the array `geodatas`
7. (2pts) write a subroutine `compute_averages` which takes as argument the array and returns two values:
  - 1/2 • `avrg`: the average of the numbers stored in `geodatas`;
  - `avrg_sq`: the average of the square of the numbers stored in `geodatas`

(you can use intrinsic functions or do-loops, the choice is yours)

8. (2pts) write a subroutine `threshold` which takes `geodatas`, `geodatas2`, and `avrg` as arguments and returns in `geodatas2`: the value stored in `geodatas` if the value is above `avrg`, and zero otherwise.

Recommendations:

- Every single used variable has to be defined.
- Comment your code appropriately.
- Points will be deduced for unclear/unreadable statements.
- Every single used variable has to be defined (I insist).

argument ( geodatas