VG101 — Introduction to Computer and Programming

Lab 3

Manuel — UM-JI (Fall 2016)

Goals of the lab

- Write basic C programs
- Learn how to organize a program
- Use pre-processing keywords

Ex. 1 — *Use of* `#define`*, Basic C programming*

Using chapter 2 or chapter 5, write a C program which returns the density of a body given its circumference and both the distance and period of a body orbiting around it. Read the data from the keyboard. What variable can be defined at the pre-processing stage?

Ex. 2 — *Understand pre-processing, program structure, data size*

Copy the following code and split it into 5 files: main.c, sum.c, prod.c, quorem.c and exp.c. Create their corresponding .h files. Add the appropriate `#include` directives. Use the `#ifdef or #ifndef` macros such that it is possible to only compile one operation at a time (for instance the program could only return the quotient and remainder but not the product, the exponent and the sum). Discuss the size of the input/output for the exponent function.

math.c

```c
#include <stdio.h>
#include <stdlib.h>
#include <math.h>

int sum (int a, int b);
int prod (int a, int b);
int quo (int a, int b);
int rem (int a, int b);
long int mpow (int a, int b);

int main(){
  int a, b;
  printf("Enter two integers: ");
  scanf("%d %d",&a, &b);
  printf("Quotient: %d\n",quo(a,b));
  printf("Remainder: %d\n",rem(a,b));
  printf("Sum: %d\n",sum(a,b));
  printf("Product: %d\n",prod(a,b));
  printf("Exponent: %ld\n",mpow(a,b));
  return 0;
}

int sum (int a, int b) {
```

```
24    return a+b;
25  }
26
27  int prod (int a, int b) {
28    return a*b;
29  }
30
31  int quo (int a, int b) {
32    return a/b;
33  }
34
35  int rem (int a, int b) {
36    return a%b;
37  }
38
39  long int mpow (int a, int b) {
40    return pow(a,b);
41  }
```