LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

Summer Term 2021
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Scientific Programming

Assignment Sheet 3

Exercise 7 (*What do I print?*)

Analyse the program below and note what it will print to the screen. Mark blanks in the output by ␣.

```
1  #include <stdio.h>
2
3  int main( void ) {
4
5    int i, ar [100];
6
7    printf("\n\n\n");
8
9    for (i = 0; i < 100; i++ ) ar[i] = 1;
10
11   ar[11] = -5;
12   ar[12] = ar[12] + 1;
13   ar[13] = ar[0] + ar[11] + 4;
14
15   for( i = 10; i <= 14; i += 1 ) {
16     printf( "ar[%2d] = %4d\n", i, ar[i] );
17   }
18
19   return 0;
20 }
```

(Hint: `%nd` will print a signed integer right-aligned into a field of width `n` including leading blanks, if required.)

Exercise 8 (*Simple counting*)

- Write a C program that counts from 1 to 30 and outputs the numbers on the shell.
- Modify the program such that it outputs every multiple of three in between 1 and 30.
- Now modify your program such that it asks the user to enter an upper bound, and outputs every multiple of three between one and the upper bound.

  Hint: You can use the following codelet to read in the number:

  ```
  int upb; scanf( "%d", &upb );
  ```

Exercise 9 (*ASCII*)

The ASCII character set consists of 128 symbols with codes from 0 to 127. Your task is to write a program that stores these symbols in a character array of length 128 and prints the ASCII symbols with codes 48 to 57. Make sure to have no implicit type conversions in your code.

Exercise 10 (*Fibonacci*)

In mathematics the Fibonacci numbers are a sequence of integers with the following property. Starting from the first two numbers 0 and 1 each following number is the sum of the two preceding ones. Write a program that outputs the first 20 Fibonacci numbers.

Exercise 11 (*Faulty Murphy*)

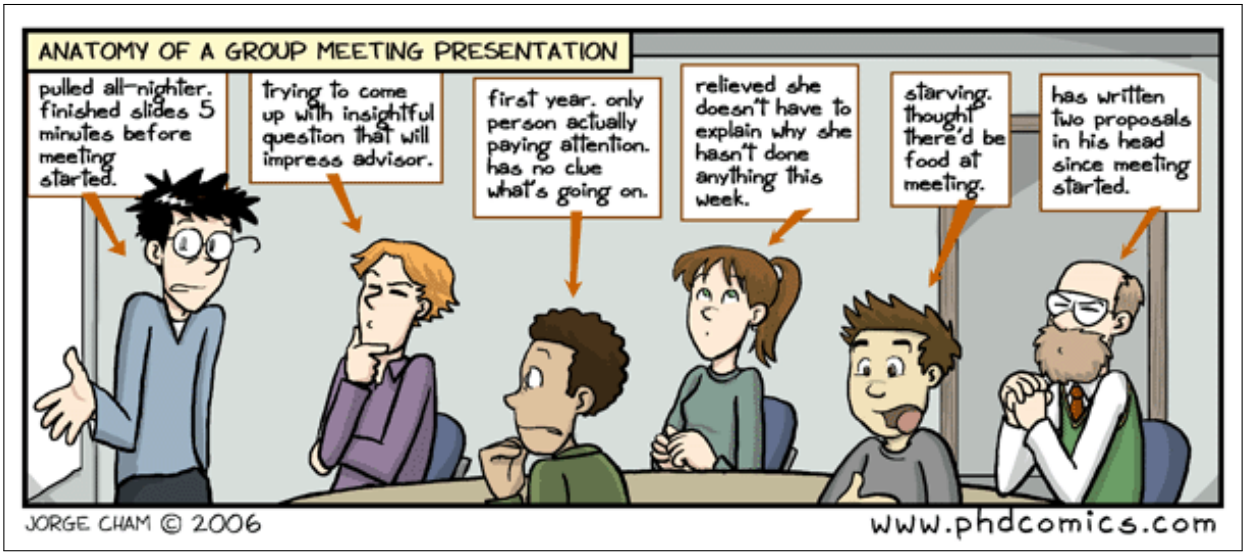
Each of the three programs below contains two errors. Find them and describe what precisely is wrong.

```
1  #include <stdio>
2
3  int main()
4  {  // one of Murphy's laws
5    print( "Whatever can go wrong, will go wrong" );
6    return 0;
7  }
```

```
10 #include <stdio.h>
11 int main()
12 {
13   printf( "Whatever can go wrong, will go wrong"\n )
14 }
```

```
17 #include <stdio.h>
18 int main()
19 {
20   / Who did say this? /
21   printf "Whatever can go wrong, will go wrong\n";
22   return 0;
23 }
```

Organisational Info: Please submit your program codes by committing them in a sub-directory Sheet03 in your working group's sub-directory. Submit solutions to the other exercises as PDF in Moodle.



„Piled Higher and Deeper“ by Jorge Cham: www.phdcomics.com