

Mathematics 1266 (C Programming) Hilary 2019, seventh (last) assignment

March 25, 2019

due by 5pm Friday 5/4/19

- Write a *single C function*

```
printhex ( int n, char v[] )
```

which prints n bytes from v , in hexadecimal format, separated by spaces, and ending with newline. For example, "hello" would be printed, using

```
printhex ( 6, "hello" )  
would produce  
68 65 6c 6c 6f 00
```

- In this assignment, it is essential that your function is stored in a C file, such as `ass07.c`, conforming to the prototype

```
void printhex ( int n, char v[] );
```

and not containing a main procedure.

- It must be compiled with the main program in a separate file, something like

```
gcc ass07.c runhex.c
```

- A specimen file `runhex.c` is stored in the data directory on the web page.
- This is a short assignment, and the deadline should be easily met. BTW: beware of sign extension.

The program `runhex.c` is:

```

#include <stdio.h>
void printhex ( int n, char v[] );

typedef struct { double re, im; } COMPLEX;

int main()
{
    float a = 1.0/2;
    printf ( "float %f\n      ", a );
    printhex (sizeof(float), (char*) &a);

    char hello[] = "hello";
    printf("hello\n      ");
    printhex (6, hello);

    short s = 30000;
    printf("short %d\n      ", s);
    printhex (sizeof(short), (char*) &s);

    int w = 1234567;
    printf("int %d\n      ", w);
    printhex (sizeof(int), (char*) &w);

    float x = (float) 100/19;
    printf("float %f\n      ", x);
    printhex(sizeof(float), (char*) &x);

    double y = (double) 100/19;
    printf("double %f\n      ", x);
    printhex(sizeof(double), (char*) &x);

    COMPLEX z = {4, 5};
    printf("complex %f %f\n      ", z.re, z.im);
    printhex(sizeof(COMPLEX), (char*) &z);
}

```

output:

```

prompt% gcc runhex.c hex.c
prompt% a.out
float 0.500000
      00 00 00 3f
hello
      68 65 6c 6c 6f 00
short 30000

```

```

        30 75
int 1234567
        87 d6 12 00
float 5.263158
        ca 6b a8 40
double 5.263158
        ca 6b a8 40 87 d6 12 00
complex 4.000000 5.000000
        00 00 00 00 00 00 10 40 00 00 00 00 00 00 14 40

```

- Comments are important and helpful, but please try to keep the lines in your program short — under 80 columns wide.
- Make sure your program works, *on the maths machines*, or at least that it ‘compiles.’ It is bad if a program is not working properly, but the *worst* thing you can do is to submit a program which does not compile on the maths machines.
- In programming, it is very important to follow a specification *exactly*, and for this reason you will always be expected to follow the specification *exactly*.