CSI 402 – Spring 2014 – Solutions to Quiz I (White Quiz Sheet)

Name: Answer Key

Note: This quiz has **four** questions for a total of 100 points.

Question 1: What is the significance of the `extern` keyword in C? (12 points)

Answer: The extern keyword used with an identifier indicates that the storage for the identifier is defined in some other file but the identifier is used in the current file.

Question 2: What is meant by "random access"? Give one example of a data structure which provides random access. (20 points)

Answer: The phrase "random access" means that the time to access any element is independent of the position of the element. Arrays provide random access.

Question 3: Assume that we are using the ITS Unix machines. (These are the machines on which you do your programming assignments.) Suppose we have a C program that writes the `int` value `-84037` to a file using `fprintf` and the format `"%d"`. How many bytes are written to the file? Why? (20 points)

Answer: The call to fprintf will write 6 bytes to the output file. The reason is that the integer value -84037 uses 6 characters when converted into a string.

(over)

Question 4: A C program has been split into two source files called `main.c` and `funct.c`. The contents of these two files are shown below.

File: `main.c`

```
#include <stdio.h>
int x, y, z;
void mystery(void);
int main(void) {
  x = -91;  y = 37;  z = 3;
  printf("%d  %d  %d\n", x, y, z);
  mystery();
  printf("%d  %d  %d\n", x, y, z);
  return 0;
}
```

File: `funct.c`

```
extern int x, y, z;
void mystery(void) {
  int x, z;
  x = 9; y = 71;  z = -3; return;
}
```

The executable version (`a.out`) of the program is created using the following Unix command:

```
gcc  main.c  funct.c
```

Indicate the output produced when `a.out` is executed. **No explanation is needed.** (30 points)

Output:

```
-91    37    3
-91    71    3
```