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

Name: Answer Key

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

Question 1: Indicate one advantage of splitting a C program into multiple files. (12 points)

Answer: When an error occurs in a function in one source file, the other source files need not be recompiled.

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

Answer: The phrase "sequential access" means that the time to access an element *depends* on the position of the element in the data structure. Linked lists 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.) Consider the following C program segment and assume that the file corresponding to the variable `outf` has been opened successfully for writing.

```
int  x = -1;  FILE *outf;
  .
  .
fwrite((const void *) &x, sizeof(int), 1, outf);
```

How many bytes are written to the file specified by `outf`? Why? (20 points)

Answer: The call to fwrite will write 4 bytes to the output file. The reason is that the on ITS Unix, each integer value uses 4 bytes.

(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 = 47;  y = -81 ;  z = 9;
  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 y, z;
  x = 1; y = -7;  z = 13; 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:

```
 47    -81    9
  1    -81    9
```