CSI 402 – Systems Programming – Handout 9.1
External Symbols in C Programs

Note: The purpose of this handout is to illustrate the nature of external symbols in C programs.

File: main.c

```
#define  MAXSIZE   10
#include  <stdio.h>
int x;  double  y[MAXSIZE];  /* External symbols defined in main. */

int  main(void) {
  double  max(double[], int);   /* Function defined elsewhere. */
  double  z;
    .
    .
  z = max(y, MAXSIZE);   /* Reference to function in another file. */
    .
    .
} /* End of main. */
```

File: f1.c

```
extern double  y[];   /* Any function in this file may uses the external symbol y. */

static  int  x;       /* This is DIFFERENT from the external symbol x.       */
                      /* This variable x is local to file f1.c; the variable */
                      /* is NOT available outside this file.                 */

void  sort (int q[], int n) {
   .
   .
   x = q[0];    /* Changes the local variable x defined in this file. */
   .
   .
} /* End of sort. */

static double  max(double d[], int n) { /* Note the keyword 'static' */
    .                             /* This function can't be used in other files. */
    .
} /* End of max. */
```

File: f2.c

```
extern double  y[];    /* Uses both the external symbols */
extern int  x;         /* x and y.                       */

double  max(double q[], int n) {  /* Doesn't have the keyword 'static' */
    .                             /* This function is used in main.c.  */
    .
} /* End of max. */
```
