Doug Branton
COSC 519
Homework 3

Source Code:

Main.c:

```
//COSC 519 HW 3
//Doug Branton

#include <stdio.h>
#include <stdlib.h>
#include <sys/types.h>
#include <unistd.h>
#include <sys/wait.h>

int main()
{
   pid_t pid;
   int count = 0;
   int n_children = 4;
   int i;


   for(i=0; i < n_children; i=i+1){
      /* fork a child process */
      pid = fork();

      if (pid < 0)
      { /* error occured */
         fprintf(stderr, "Fork Failed");
         return 1;
      }

      else if (pid == 0)
      { /* child process */

         //sleep i seconds so that each process returns full output separately
         //Otherwise all 4 children will print to terminal whenever they execute, which is fine, but messy
         sleep(i);

         int child_pid = getpid();
         printf("====================\n");
         printf("Child PID: %d\n", child_pid);
         printf("====================\n");
         execlp("./hello", "", NULL);
      }
   }
```

```
    for(i=0;i<n_children;i=i+1) //Have a wait loop that has n_children number of waits
    { /* Parent Process */
       /* parent will wait for child to complete */
       wait(NULL);
    }
    printf("All Children Complete\n");


    return 0;
}
```

Hello.c:

```
//This is first program
//Dr. Karne
//hello.c
#include <stdio.h>
#include <stdlib.h>

int main (int argc, char **argv)
{
   char c1;
   unsigned char c2;
   int i1=0;
   long l2=0;
   char *cptr;
   int *iptr;
   long *lptr;
   char array1[40] = "This is a string";

   cptr = (char *)malloc(200);
   iptr = (int *)malloc(200);
   lptr = (long *)malloc(200);

   c1 = 'X';
   c2 = 0x44;
   i1 = 0x100;
   l2 = 0x0123456789abcdef;

   *iptr = 0x2000;
   *lptr = 0x88889999aaaabbbb;

   printf("Hello World\n");
   printf("\n\n");
   printf("l2: %lx \n", l2);
   printf("i1: %x \n", i1);
   printf("i1: %10x \n", i1);
   printf("i1: %4x \n", i1);
   printf("c1: %c \n", c1);
   printf("string: %s \n", array1);
```

```
   return 0;
}
```

Output:

```
====================
Child PID: 109642
====================
Hello World


l2: 123456789abcdef
i1: 100
i1:       100
i1:  100
c1: X
string: This is a string
====================
Child PID: 109643
====================
Hello World


l2: 123456789abcdef
i1: 100
i1:       100
i1:  100
c1: X
string: This is a string
====================
Child PID: 109644
====================
Hello World


l2: 123456789abcdef
i1: 100
i1:       100
i1:  100
c1: X
string: This is a string
====================
Child PID: 109645
====================
Hello World


l2: 123456789abcdef
i1: 100
```

i1: 100
i1: 100
c1: X
string: This is a string
All Children Complete