

Cs352 — Homework #3

Dry exercise

September 16, 2003

This is a dry exercise, so no programming is required, and you should submit your answer in class, on paper. It should serve as a preparation for the quiz, though the questions in this homework are in general harder than the ones that would appear in the quiz. You are advised to solve the question without the use of a computer, and compile them only for verifying purposes.

Please write or print your answers on blank letter-sized paper (single-sided ONLY). Please indicate the problem number at the beginning of each answer. If there are multiple pages, please staple them. Also, please write your name and CS login ID on top of the first page. Illegible handwriting will cause POINTS OFF. This homework is due before the class on Sept. 23 (Tue.). TA's will collect your submission before the class.

Due Time: 9/23/03 (3:30PM)

1. What is the result of the following code ? Explain your answer

```
#include <stdio.h>
main(){
. char a[10];
. char *p1=a, *p2 = &a[9] ;
. printf("%d %d", p2-p1, (char*)p2 - (char*)p1 );
}
```

2. What does the following code do ? Give an arithmetic expression to the printed function, as a function of n (for example your answer might be that the output equals n^2);

```
#include <stdio.h>
```

```

int myst( int n ) ;
main(){
    int n = 0 ;
    do{
        print("Enter a number: " ) ;
    }while (1 != scanf( "%d" , &n )  ||  n<0  || n>50) ;

    printf("OUTPUT: %d",  myst( n ) ) ;
}
/* Hey - a new function. What does it do ?? */
int myst( int k ) {
    if ( k==0 ) return 1 ;
    return 2 * k * myst( k-1 ) ;
}

```

3. Again — what is the output of the following program ? Explain

```

#include <stdio.h>
void myst( char *p ) ;
main(){
    char s[]="Hello World" ;
    myst( s ) ;
}

void myst( char *p ){
    if ( '\0' == *p ) return ;
    myst( p+1 );
    putchar( *p ) ;
}

```

4. Consider the following program.

```

#include<stdio.h>
main(int argc, char *argv[] ) {
    int k ;
    printf("Enter a number ");
    scanf("%d", &k ) ;
    if ( k >  argc ) return -1 ; /* Error */
    while( k ) printf(" %s", argv[k--] ) ;
}

```

Assume that the executable of the program is called *ex17*. What would be the result of typing from the command line

lec > *ex17 hello world what a nice day*

and replying by '4' to the question of the program (please enter a number).

What would be printed ? Explain.

5. What does the following code do ? How does it work ? Answer briefly.

```
#include<stdio.h>
main(){
    void myst( char *p);
    char s[]="NiceDAY" ;
    myst( s ) ;
    printf( "%s ", s ) ;
}
void myst( char *p ) {
    char c ;
    for( c=*p ; ( *p = *(p+1) ) != '\0' ;    p++ ) ;
    *p=c ;
}
```