EEE101 C Programming and Software Engineering
Solutions to Lab Practice 6

Exercise 1

Self practice.

Exercise 2

The equivalent and fully parenthesized statement is:

a += (b += (c += 7))

The final values of the variables a, b and c are 13, 12 and 10 respectively.

Exercise 3

```
int quack=2;
    quack +=5;          /*quack equals 7*/
    quack *=10;         /*quack equals 70*/
    quack -=6;          /*quack equals 64*/
    quack /=8;          /*quack equals 8*/
```

Exercise 4

```
#include<stdio.h>
#include<ctype.h>
#include<string.h>
main(){
int i, flag, n;
char a[100];
while(1){
        flag=0;
        printf("Please enter an integer value: \n");
        scanf("%s",a);                          /*read a string*/
        for(i=0; i<strlen(a); i++)
                if(isdigit(a[i])==0)            /*test all elements of the string*/
                        flag=1;                 /*to make sure they are digits*/
        if(flag==1)
                break;                          /*break if any element is not a digit*/
        else{
                n=atoi(a);                      /*covert string to an integer*/
                for(i=0; i<11; i++)
                        printf("%d ",n+i);      /*print numbers on screen*/
                }
        printf("\n");
        }
}
```

Exercise 5

```
#include<stdio.h>
int mul2(int a);                /*function mul2 is declared*/
int mul3(int a);                /*function mul3 is declared*/
main(){
int input;
printf("Please input an integer\n");
scanf("%d",&input);

if(mul2(input)==0)                                      /*check if input integer is even*/
        printf("The input integer is even\n");

if (mul3(input)==0)                                     /*check if input integer is a multiple of 3*/
        printf("The input  integer is a multiple of 3\n");

if((mul2(input)==0)&&(mul3(input)==0))          /*check if the input integer is a*/
        printf("The input integer is a multiple of 6\n");       /*multiple of 6*/

if(((mul2(input)!=0)
        && (mul3(input)!=0))
        && (!((mul2(input)==0) && (mul3(input)==0))))
        printf("The input integer is not even and not a multiple of 3 and not a multiple of
6\n");
        }

int mul2(int a){                /*function mul2 is defined*/
        return a%2;
}

int mul3(int a){                /*function mul3 is defined*/
        return a%3;
}
```

Exercise 6

```
#include<stdio.h>

int fibonacci(int i);              /*function fibonacci is declared*/

main(){
int input,i;
printf("Please input an integer");
scanf("%d",&input);

for(i=0;i<input;i++)
        printf("%d\n",fibonacci(i));
}

int fibonacci(int i){              /*recursive function fibonacci is declared*/
        if(i==0)
                return 0;          /*if the input integer is 0, the function returns 0*/
        if(i==1)
                return 1;          /*if the input integer is 1, the function returns 1*/
        else
                return (fibonacci(i-1)+fibonacci(i-2));
        }                  /*in other cases, the function fibonacci is recursively called*/
```

Exercise 7

```
#include<stdio.h>      /*the header file stdlib.h includes functions involving memory*/
#include<stdlib.h>     /*allocation, process control, conversions and others the*/
#include<time.h>       /*header file time.h consists of functions that provide*/
                       /*standardized access to time/date manipulation and formatting*/

int throw();           /*function throw is declared*/

int main(){
int dice,point;
getch();
srand(time(NULL));          /*to initialize the random number generator */
dice=throw();               /*to simulate the first throw of two dice*/
dice+=throw();
printf("The sum of the first throw is %d\n", dice);
point=dice;

if((point==7)||(point==11)){                                  /*if the outcome of the first*/
        printf("The sum is 7 or 11, so the player wins\n");   /*throw is either 7 or*/
        return 0;                                                     /*11, the player wins*/
        }

if((point==2)||(point==3)||(point==12)){                      /*if the outcome of the first*/
        printf("The sum is 2,3 or 12, so the player loses\n");        /*throw is either 2,*/
        return 0;                                             /*3 or 12, the player loses*/
        }

dice=0;
while(point!=dice){                          /*the player keeps throwing the dice*/
        dice=0;                         /*until the sum becomes the player's point*/
        dice=throw();
        dice+=throw();
        printf("The sum of other throws is %d\n", dice);
        if(dice==7) {                                  /*the player loses by rolling a*/
                printf("So the player loses\n");               /*7 before making the point*/
                return 0;
                }
        }

printf("The sum is %d which is the same as the player's point\n", dice);
printf("So the player wins\n");
return 0;
}

int throw(){                                           /*function throw is defined which */
        return(1+rand()%6);          /* generates a random number between 0-6*/
        }
```