Ryan Lopez

Lab 1

Question 1:

```c
/*////////////////////////////////////////////
//   Title:     L1_Q1.c
//   Author:    Ryan L.
//   Description: printing a pattern of specfied numbers
*/////////////////////////////////////////////

#include <stdio.h>

int main() {
    // needed variables (test case: 0 1)
    int baseInt;
    int headInt;

    //gather input from user
    printf("enter the numbers: ");
    scanf("%d %d", &baseInt, &headInt);

    //print the numbers in the required format
    printf("here is the output:\n");
    printf("\t%d\n",headInt);
    printf("\t%d%d\n",headInt,headInt);
    printf("%d%d%d%d%d%d%d\n",baseInt,baseInt,baseInt,baseInt,headInt,headInt
        ,headInt);
    printf("%d%d%d%d%d%d%d%d\n",baseInt,baseInt,baseInt,baseInt,headInt,headInt
        ,headInt,headInt);
    printf("%d%d%d%d%d%d%d\n",baseInt,baseInt,baseInt,baseInt,headInt,headInt
        ,headInt);
    printf("\t%d%d\n",headInt,headInt);
    printf("\t%d\n",headInt);

    return 0;
}
```

```
/tmp/o142iZI47N.o
enter the numbers: 0 1
here is the output:
    1
    11
0000111
00001111
0000111
    11
    1
```

Question 2:

```c
/*////////////////////////////////////////////
//   Title:     L1_Q2.c
//   Author:    Ryan L.
//   Description: Calculating the annual and monthly salary
*////////////////////////////////////////////

#include <stdio.h>

int main() {

    // needed variables (test case: 10)
    float w;
    float sal;

    // gather input from user
    printf("Enter hourly wage: ");
    scanf("%f", &w);

    //set the weekly salary
    sal = w * 40;

    //print the output to the user
    printf("Annual Salary is: %.1f\n", sal*50); //prints annual salary

    printf("Montly Salary is: %.1f", sal*4);

    return 0;
}
```

```
/tmp/o142iZI47N.o
Enter hourly wage: 10
Annual Salary is: 20000.0
Montly Salary is: 1600.0
```

Question 3:

```c
/*////////////////////////////////////////////
//   Title:     L1_Q3.c
//   Author:    Ryan L.
//   Description: Calculating the product and average of 4 numbers in both int and double format
*////////////////////////////////////////////

#include <stdio.h>

int main() {
    // needed variables (test case: 8 10 5 4)
    int num1, num2, num3, num4;

    float avgdbl, proddbl;

    //gather input from user
    printf(": ");
    scanf("%d %d %d %d", &num1, &num2, &num3, &num4);

    //print the product and average of the numbers
    printf("%d\t%d\n",(num1*num2*num3*num4),(num1+num2+num3+num4)/4);

    //turn the numbers into doubles
    proddbl = num1*num2*num3*num4;
    avgdbl = (num1+num2+num3+num4);
    avgdbl = avgdbl/4;

    //print the product and average of the numbers in double format
    printf("%.3f\t%.3f",proddbl,avgdbl);

    return 0;
}
```

```
/tmp/o142iZI47N.o
: 8 10 5 4
1600    6
1600.000    6.750
```

Question 4:

```c
/*////////////////////////////////////////////
//   Title:      L1_Q4.c
//   Author:     Ryan L.
//   Description: Calculating the calories burned using age, weight, heart rate, and time
*////////////////////////////////////////////

#include <stdio.h>

int main() {
    //declare needed variables (test case: 49 155 148 60)
    double age, weight, heart_rate, t;

    //prompt user for input of the needed variables
    printf(": ");
    scanf("%lf %lf %lf %lf", &age, &weight, &heart_rate, &t);

    //calculate the calories burned
    double caloriesBurned = (((age * 0.2757) + (weight * 0.03295) + (heart_rate * 1.0781) - 75.499) * t) / 8.368;

    //print the calories burneD
    printf("Calories burned: %.2lf calories", caloriesBurned);

    return 0;
}
```

```
/tmp/o142iZI47N.o
: 49 155 148 60
Calories burned: 736.21 caloriesS
```

Question 5:

```c
/*////////////////////////////////////////////
//   Title:      L1_Q5.c
//   Author:     Ryan L.
//   Description: Printing the name and grade for john
*////////////////////////////////////////////

#include <stdio.h>

int main() {

    //declare needed variables
    char name[] = "John";
    char grade = 'A';

    //print the name and grade with appropriate formatting
    printf("Hello %s!\nYour grade is: %c", name, grade);

    return 0;
}
```

```
/tmp/o142iZI47N.o
Hello John!
Your grade is: A
```

Question 6:

Ryan Lopez

```c
/*////////////////////////////////////////////
//   Title:     L1_Q6.c
//   Author:    Ryan L.
//   Description: Swapping the values of x & y
*////////////////////////////////////////////


#include <stdio.h>

int main() {

    //declare needed variables (test case: 5 7)
    int x, y;

    //prompt user for x & y
    printf("Input values for x & y: ");
    scanf("%d %d", &x, &y);

    //print the values of x & y before swapping
    printf("before swapping the values of x & y: %d %d\n", x, y);

    //swapping the values
    x = x + y;
    y = x - y;
    x = x - y;

    //print the values of x & y after swapping
    printf("after swapping the values of x & y: %d %d\n", x, y);

    return 0;
}
```

```
/tmp/o142iZI47N.o
Input values for x & y: 5 7
before swapping the values of x & y: 5 7
after swapping the values of x & y: 7 5
```