3.17

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

int main()
{
    int account;
    float inbal, totcharge, totcredit, creditlim, bal;

    printf("Enter Account Number (-1 to end): ");
    scanf("%d", &account);

    while (account>0)
    {
        printf("Enter beginning balance: ");
        scanf("%f", &inbal);
        printf("Enter total charges: ");
        scanf("%f", &totcharge);
        printf("Enter total credits: ");
        scanf("%f", &totcredit);
        printf("Enter credit limit: ");
        scanf("%f", &creditlim);

        bal = inbal + totcharge - totcredit;

        if (bal > creditlim)
        {
            printf("\nAccount:        %d", account);
            printf("\nCredit limit:  %f", creditlim);
            printf("\nBalance:        %f", bal);
            printf("\nCredit Limit Exceeded");
            return 0;
        }
        else return 0;
    }
    return 0;
}
```

3.18

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

int main()
{
    float sales, salary;

    printf("Enter sales in dollars (-1 to end): ");
    scanf("%f", &sales);

    while (sales>0)
    {
        salary = 200 + 0.09*sales;
        printf("Salary is: %f", salary);
        return 0;
    }
    return 0;
}
```

3.19

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

int main()
{
    float princ, rate, day, interest;

    printf("Enter loan principal (-1 to end): ");
    scanf("%f", &princ);

    while (princ>0)
    {
        printf("Enter interest rate: ");
        scanf("%f", &rate);
        printf("Enter term of the loan in days: ");
        scanf("%f", &day);

        interest = princ * rate * day / 365;
        printf("The interest charge is $%f", interest);
        return 0;
    }
    return 0;
}
```

3.20

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

int main()
{
    float hour, rate, salary;

    printf("Enter # of hours worked (-1 to end): ");
    scanf("%f", &hour);

    while (hour>0)
    {
        printf("Enter hourly rate of worker: ");
        scanf("%f", &rate);

        if (hour>40)
            salary = rate*hour+(hour-40)*5;
        else
            salary = rate*hour;

        printf("Salary is $%f", salary);
        return 0;
    }
    return 0;
}
```

3.33

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

int main()
{
    char sign = '+';
    char sign2 = ' ';
    int i, j;

    for (i = 0; i < 3; i++)
    {
        for (j = 0; j < 12; j++)
        {
            if ((i == 0) || (i == 2) || (j == 0) || (j == 11))
                printf("%c", sign);
            else
                printf("%c", sign2);
        }
        printf("\n");
    }
}
```

4.15

```c
#include <stdio.h>
#include <stdlib.h>
#include <math.h>

int main()
{
    float CI, rate;

    for (rate = 10; rate <= 12; rate += 0.5)
    {
        CI = 5000* (pow((1 + rate/100), 15));
        printf("Compound interest with %.1f percent rate is : %.2f\n", rate, CI);
    }
}
```

4.16

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

int main()
{
    char sign = '*';
    char sign2 = ' ';
    int i, j;

    for (i = 0; i < 10; i++)
    {
        for (j = 0; j < 10; j++)
        {
            if (i >= j)
                printf("%c", sign);
            else
                printf("%c", sign2);
        }
        printf("\n");
    }
    printf("\n");

    for (i = 0; i < 10; i++)
    {
        for (j = 0; j < 10; j++)
        {
            if (i + j <= 9)
                printf("%c", sign);
            else
                printf("%c", sign2);
        }
        printf("\n");
    }
    printf("\n");

    for (i = 0; i < 10; i++)
    {
        for (j = 0; j < 10; j++)
        {
            if (i <= j)
                printf("%c", sign);
            else
                printf("%c", sign2);
        }
        printf("\n");
    }
    printf("\n");

    for (i = 0; i < 10; i++)
    {
        for (j = 0; j < 10; j++)
        {
            if (i + j >= 9)
                printf("%c", sign);
            else
                printf("%c", sign2);
        }
        printf("\n");
    }
}
```

4.27

main.c ✕

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

int main()
{
    int x, y, r, dubx, duby, dubr;

    for (r = 0; r < 500; r++)
    {
        for (x = 1; x < 500; x++)
        {
            for (y = 1; y < 500; y++)
            {
                dubx = x * x;
                duby = y * y;
                dubr = r * r;
                if (dubr == dubx + duby)
                    printf("%d, %d, %d\n", x, y, r);
            }
        }
    }
}
```

4.28

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

int main()
{
    int code, week, hour, item;
    double rate, salary, gross;

    start:
    printf("Enter paycode\nManager: 1\nHourly worker: 2\nCommission worker: 3\nPiece worker: 4\n");
    scanf("%d", &code);
    printf("\n");

    switch(code)
    {
        case 1:
        printf("Enter amount of weeks: ");
            scanf("%d", &week);
        salary = 800 * week;
        if (week < 1)
            printf("I apologize, number of weeks do not meet the requirement for a salary");
        else
            printf("Salary is: %.2lf$", salary);
        break;

        case 2:
        printf("Enter # of hours worked: ");
            scanf("%d", &hour);
        printf("Enter hourly rate of worker: ");
            scanf("%lf", &rate);

            if (hour>40)
                salary = rate*hour+(hour-40)*5;
            else
                salary = rate*hour;

            printf("Salary is: %.2lf$", salary);
        break;

        case 3:
        printf("Enter gross weekly sale: ");
            scanf("%lf", &gross);

        salary = 250 + gross*(0.057);
            printf("Salary is: %.2lf$", salary);
        break;

        case 4:
        printf("Input amount of items: ");
            scanf("%d", &item);
        salary = item * 200;
            printf("Salary is: %.2lf$", salary);
        break;

        default:
            printf("ERROR, inputted integer not within paycode\nPlease try again\n\n");
            goto start;

    }
}
```

4.31

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

int main()
{
    char sign = '*';
    char sign2 = ' ';
    int i, j;

    for (i = 0; i < 9; i++)
    {
        for (j = 0; j < 9; j++)
        {
            if (i + j <= 3)
                printf("%c", sign2);
            else if (i + j >= 13)
                printf("%c", sign2);
            else if (i + j >= 13)
                printf("%c", sign2);
            else if (i - 2 >= j + 3)
                printf("%c", sign2);
            else if (i + 2 <= j - 3)
                printf("%c", sign2);
            else
                printf("%c", sign);
        }
        printf("\n");
    }
}
```

Conclusion:

The usage of for statements are very useful for loops. Loops are usually needed in printing multiple things or calculating something in a looping manner. Switch case statements are useful for making a function that runs according to the inputted data within switch. While statements are also useful in looping, the difference of while and for is that while contains a condition, for contains an, initialization, condition, and iteration.

Code:

https://github.com/AldrichWijaya/Homework