Week 2 Lab Tutorial: C Control Flow – Suggested Solutions

Lab Questions

Q1: (computeGrade)

```c
#include <stdio.h>
int main()
{
    int studentNumber = 0, mark;

    printf("Enter Student ID: \n");
    scanf("%d", &studentNumber);
    while (studentNumber != -1)
    {
        printf("Enter Mark: \n");
        scanf("%d", &mark);
        switch ((mark+5) / 10) {
            case 10:
            case  9:
            case  8: printf("Grade = %c\n", 'A');
                break;
            case  7: printf("Grade = %c\n", 'B');
                break;
            case  6: printf("Grade = %c\n", 'C');
                break;
            case  5: printf("Grade = %c\n", 'D');
                break;
            default: printf("Grade = %c\n", 'F');
        }
        printf("Enter Student ID: \n");
        scanf("%d", &studentNumber);
    }
    return 0;
}
```

Q2: (printAverage)

```c
#include <stdio.h>
int main()
{
    int total, count, lines, input;
    double average;
    int i;

    printf("Enter number of lines: \n");
    scanf("%d", &lines);
    for (i = 0; i < lines; i++) {
        total=0; count=0;
        printf("Enter line %d (end with -1): \n", i+1);
        scanf("%d", &input);
        while (input != -1)
        {
            total += input;
            count++;
            scanf("%d", &input);
        }
        average = (double)total/(double)count;
        printf("Average = %.2f\n", average);
    }
    return 0;
}
```

Q3: (printPattern)

```c
#include <stdio.h>
int main()
{
```

```c
    int row, col, height;
    int num = 0;
    printf("Enter the height: \n");
    scanf("%d", &height);
    printf("Pattern: \n");
    for (row = 0; row < height; row++)
    {
        for (col = 0; col < row+1; col++)       // print numbers
            printf("%d",num+1);
        num = (num + 1) % 3;                    // print up to number 3
        printf("\n");
    }
    return 0;
}
```

Q4: (printSeries)

```c
#include <stdio.h>
int main()
{
    int n, denominator = 1;
    float x, result = 1.0, numerator = 1.0;

    printf("Enter x: \n");
    scanf("%f", &x);
    for (n = 1; n <= 10; n++)
    {
        denominator *= n;
        numerator *= x;
        result += numerator/denominator;
    }
    printf("Result = %.2f\n",  result);
    return 0;
}
```