Total marks: 25

Lab 4: Loops and pattern printing

Note: Discussion with peers is not allowed. If there is any confusion you can ask TAs. Last hour of lab is reserved for evaluation purpose, so do proper time management and complete your tasks timely.

- **If any student is found discussing, 5 marks will be deducted straight away**
- **In case of cheating (cheat prom peer or from Internet), straight zero will be given WITHOUT ANY PRIOR WARNING**

Question#1: Print the following pattern on the console

(a). [5 marks]

```
1   2   3   4   5   6
1   3   5   7   9   11
1   4   7   10  13  16
1   5   9   13  17  21
1   6   11  16  21  26
1   7   13  19  25  31
```

(b). [5 marks]

```
1
2 2
1 2 3
4 4 4 4
1 2 3 4 5
6 6 6 6 6 6
1 2 3 4 5 6 7
8 8 8 8 8 8 8 8
1 2 3 4 5 6 7 8 9
10 10 10 10 10 10 10 10 10 10
```

(c). [5 marks]

```
                    *
                  9 9
                8 8 8
              7 7 7 7
            6 6 6 6 6
          * * * * * *
        4 4 4 4 4 4 4
      3 3 3 3 3 3 3 3
    2 2 2 2 2 2 2 2 2
  1 1 1 1 1 1 1 1 1 1
```

Question#2: [10 marks]

Input an integer containing only 0s and 1s (i.e., a "binary" integer) and print its decimal equivalent. Use the modulus and division operators to pick off the "binary" number's digits one at a time from right to left. Much as in the decimal number system, where the rightmost digit has a positional value of 1, the next digit left has a positional value of 10,

then 100, then 1000, and so on, in the binary number system the rightmost digit has a positional value of 1, the next digit left has a positional value of 2, then 4, then 8, and so on. Thus the decimal number 234 can be interpreted as 2 * 100 + 3 * 10 + 4 * 1. The decimal equivalent of binary 1101 is 1 * 1 + 0 * 2 + 1 * 4 + 1 * 8 or 1 + 0 + 4 + 8, or 13. [10 marks]