

Problem Set 2

1. What is the output of the following program?

```
#include <stdio.h>
int main() {
    int x = 20;
    int y = 3;

    ++x;
    x /= y;
    y = x--;
    printf("%d\n", x %= y);
}
```

2. Find the invalid variable names in C.

```
number 3
x*y
xxy
else
elseif
intchar
int_char
int-char
@twitter
(twitter)
_HelloWorld
__HelloWorld
_____
BestWishes2You
BestWishes2You&All
_this_is_a_great_match_
$#@RFEWR%#
9940681455
9940681455A
A9940681455
stdio
stdio.h
CafeCoffeeDay
gUrUnAtH
Zait00n
__FILE__
~home
mkdir
rm-i
iNt
365_days
365days
CS1100
```

3. What is the output of the following program and Why?

```
#include <stdio.h>

int main() {
    signed int x = 10;
    printf("%f %.1e %lf\n", 9.1e5, 9.1e5, 9.1);
    printf("%d %u %p\n", x, x, &x);
    printf("%2x %10o %8b\n", x, x, x);
    printf("%-10s %20s\n", "Hello x", "Bye y see you.");
    printf("This is %1s containing %10d number of students with average weight of %.3f KG\n",
"CS1100", 110, 49.21553);
    printf("On an average, %d%% of the students are eager to learn.\n", 90);
}
```

4. What is the output of the following program and Why?

```
#include <stdio.h>

int main() {
    int x = 0x10;
    int y = 010;
    int z = x + y;

    printf("%d %x %o\n", z, z, z);
}
```

5. Write a program to read a 5-bit binary number and print its 1's complement. For instance, if the input is 10110, the output should be 01001. Do not use if-else or loops.

6. Write a program to read a negative 5-bit binary number and print its 2's complement. For instance, if the input is -10110, the output should be 101010. Do not use if-else or loops.

7. Write a program to right-rotate a 5-bit binary number. For instance, if the input is 11000, the output should be 01100. Do not use if-else or loops.

8. Write a program to right-rotate a 5-bit binary number by three places (instead of one). For instance, if the input is 11000, the output should be 00011. Do not use if-else or loops.