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Lecture 3 Assignment

1.

```
1  #include <stdio.h>
2
3  int main(void)
4  {
5      int i;
6      i = 1;
7      while (i <= 128)
8      {
9          printf("%d ", i);
10         i *= 2;
11     }
12     return 0;
13 }
14
```


Output: 1 2 4 8 16 32 64 128

2.

```
1  #include <stdio.h>
2
3  int main(void)
4  {
5      int i;
6      // Loop A (while Loop)
7      i = 10;
8      while (i < 10)
9      {
10         printf("%d", i);
11         i++;
12     }
13     printf("\n");
14     // Loop B (for Loop)
15     i = 10;
16     for (; i < 10;)
17     {
18         printf("%d", i);
19         i++;
20     }
21     printf("\n");
22     // Loop C (do-while Loop)
23     i = 10;
24     do
25     {
26         printf("%d", i);
27         i++;
28     } while (i < 10);
29     printf("\n");
30     return 0;
31 }
32
```


Loops A and B will only run if the condition is met. Loop C will run at least once even if the condition is not met. In my source code, I set the value of i to 10, and Loop C displayed 10 while Loops A and B displayed nothing.

3.



```
1  #include <stdio.h>
2
3  int main(void)
4  {
5      int i;
6      for (i = 1; i <= 128; i *= 2)
7      {
8          printf("%d ", i);
9      }
10     return 0;
11 }
12
```

4.



```
1  #include <stdio.h>
2
3  int main(void)
4  {
5      // Declare the variables
6      int base = 2, exponent, power = 1;
7      // Prompt the user to enter the exponent
8      printf("Enter the exponent: ");
9      scanf("%d", &exponent);
10     // Display the first half of the equation
11     printf("%d^%d = ", base, exponent);
12     // Solve for the power of two
13     for (; exponent > 0; exponent--)
14     {
15         power *= base;
16     }
17     // Display the second half of the equation
18     printf("%d\n", power);
19     return 0;
20 }
21
```

5.

```
1  #include <stdio.h>
2
3  int main(void)
4  {
5      // Declare the variables
6      int month_days, start_day;
7      // Check the validity of the days
8      do
9      {
10         // Prompt the user to enter number of days in month
11         printf("Enter number of days in month: ");
12         scanf("%d", &month_days);
13         if (month_days < 28 || month_days > 31)
14         {
15             printf("Invalid input! The number of days in month must be between 28 and 31.\n");
16         }
17     } while (month_days < 28 || month_days > 31);
18     do
19     {
20         // Prompt the user to enter the starting day of the week
21         printf("Enter the starting day of the week (1=Sun, 7=Sat): ");
22         scanf("%d", &start_day);
23         if (start_day < 1 || start_day > 7)
24         {
25             printf("Invalid input! The starting day of the week must be between 1 and 7.\n");
26         }
27     } while (start_day < 1 || start_day > 7);
28     // Display the days of the calendar
29     printf("Mon Tue Wed Thu Fri Sat Sun\n");
30     // Display four spaces for every blank slot on the first week
31     for (int day = 1; day < start_day; day++)
32     {
33         printf("    ");
34     }
35     // Display the number of days in month
36     for (int day = 1; day <= month_days; day++)
37     {
38         // Assign three characters to each day and follow with a space
39         printf("%3d ", day);
40         // Go to the next line if reached the end of the current line
41         if ((start_day + day - 1) % 7 == 0)
42         {
43             printf("\n");
44         }
45     }
46     printf("\n");
47     return 0;
48 }
49
```

GitHub: <https://github.com/chstrkn/CMSC21>