Loop/Repetition Statements
Lecture 4 Assignments

1. What is the output of the following program?
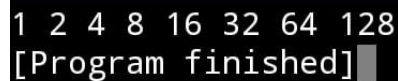
```c
#include <stdio.h>

int main(void)
{
    int i;

    i = 1;
    while (i <= 128) {
        printf("%d ", i);
        i *= 2;
    }

    return 0;
}
```
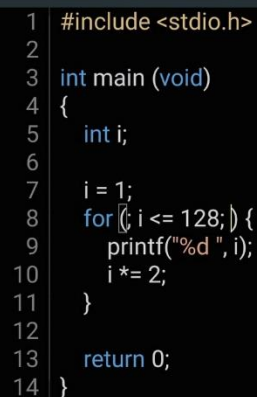
Output:

```
1 2 4 8 16 32 64 128
[Program finished]
```

2. Which one of the following statements is not equivalent to the other two (assuming that the loop bodies are the same)?

```
a) while (i < 10) {...}
b) for (; i < 10;) {...}
c) do {...} while (i < 10);
```

Answer: The statement that is not equivalent to the other two is statement c which is do {...} while (i < 10);

3. Convert item 1 into an equivalent for statement. You can validate your answer by checking if the produced outputs by both the while and for statements are similar.

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

4. Write a code that computes for the power of two:

```c
#include<stdio.h>

int main(void)
{
    int base = 2;
    int exponent, result = 1;

    printf("Enter exponent: ");
    scanf("%d", &exponent);

    int i = 1;

    while(i <= exponent)
    {
        result *= base;
        i++;
    }

    printf("%d^%d = %d", base, exponent, result);

    return 0; // return 0 to operating system
}
```

5. Write a program that displays a one-month calendar.

```c
#include<stdio.h>

int main(){

    int i,days;
    int start;

    printf("Enter number of days in month: ");

    scanf("%d",&days);

    if (days < 28)  {
        printf("Invalid Input!");
    }

    else if (days > 31) {
        printf("Invalid Input!");
    }

    else {
        printf("Enter the starting day of the week (1=Sun, 7=Sat): ");
        scanf("%d",&start);

        for(i=1;i<start;i++)
            printf(" ");
        for(i=1;i<=days;i++){
            printf("%3d",i);
            if((start+i-1)%7==0)
            printf("\n");
        }
    }
    return 0;
}
```