

EECE.2160: ECE Application Programming

Summer 2017

Lecture 4: Key Questions

May 22, 2017

1. Explain the usage and basic structure of a `while` loop.

2. **Example:** What does each of the following short programs print?

a. `x = 7;`
`while (x < 10)`
`{`
 `printf("%d ", x);`
 `x = x + 1;`
`}`

b. `x = 7;`
`while (x < 3)`
`{`
 `printf("%d ", x);`
 `x = x + 1;`
`}`

3. **Example:** Finish the following program as directed

```
int main() {
    int i;                // Number to square
    int iSquared;        // Square of the number
    printf(" i          i^2\n"); // Column headings

    // Compute and display the squares of numbers 0 to 10
    // Use a field width of 2 to print i and 10 to print i^2
    //   with no extra space between the fields

    return 0;
}
```


5. What is the difference between a `while` loop and a `do-while` loop?

6. Show the difference between the outputs of the loops below

```
x = 7;  
do {  
    printf("%d",x);  
    x = x + 1;  
} while ( x < 3 );
```

```
x = 7;  
while ( x < 3 )  
{  
    printf("%d",x);  
    x = x + 1;  
}
```

7. Recall the example for using a while loop with a sentinel value in the grade average program and show that loop written as a `do-while` loop.

8. In what cases are `for` loops useful? Describe the basic structure of a `for` loop.

9. Describe the operators that allow you to directly modify a variable without writing a full assignment statement.

10. Explain the difference between pre- and post-increment or decrement operators.

11. **Example:** What does the following program print?

```
int n = 5;
printf("n = %d\n", ++n);
printf("Now, n = %d\n", n++);
printf("Finally, n = %d\n", n);
```


12. **Example:** What does each of the following print?

a.

```
for (i = 5; i < 40; i += 8)
{
    printf("%d ", i);
}
```

b.

```
for (i = -5; i < -10; i--)
{
    printf("%d ", i);
}
```

c.

```
for (i = 10; i <= 100; i = i+10)
{
    if (i % 20)
        printf("%d ", i);
}
```

d.

```
for (i = 5; i < 10; i += i%2)
{
    printf("%d ", i++);
}
```