

16.216: ECE Application Programming

Fall 2012

Lecture 10: Key Questions September 26, 2012

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;
}
```

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

a.

```
int i = 0;
while (i < 30) {
    if ((i % 3) == 0)
        printf("%d\n", i);
    i = i + 2;
}
```

b. Assume input is: 3 8 -4 -7 0 5 2

```
do {
    scanf("%d\n",&x);
    printf("x = %d, x/2 = %d\n", x, x/2);
} while ((x > 2) || (x < 0));
```

c. Assume input is: b c d e f g h

```
char c = 'a';
while (c != 'h') {
    printf("%c", c);
    scanf("%c", &c);
}
```