This quiz has 2 questions, for a total of 10 points.

1. **3 points** What is the output (return value) of the following C program?

```c
int main()
{
    int x, y, t, z;
    x = 0;
    y = 0;
    t = x < 5;
    while (t) {
        z = x % 2;
        if (z) {
            y = x + y;
        } else {
        }
        x = x + 1;
        t = x < 5;
    }
    return y;
}
```

Solution:

4

2. **7 points** Convert the above program to an equivalent program that does not use structured control statements (e.g. if and while). You may use if as long as the body of the if contains only a goto. Do not partially evaluate the program.

```c
int main()
{
    int x, y, t, z;
    x = 0;
    y = 0;
    t = x < 5;
    goto while_cond;

    while_body:
        z = x % 2;
        if (z) goto then_clause;
        else {
        }
        x = x + 1;
        t = x < 5;
    }
    return y;
}
```

Solution:

```c
int main()
{
    int x, y, t, z;
    x = 0;
    y = 0;
    t = x < 5;
    goto while_cond;

    while_body:
        z = x % 2;
        if (z) goto then_clause;
        else {
        }
        x = x + 1;
        t = x < 5;
    }
    return y;
}