

## Programming Motors and Timers in NQC

Name: \_\_\_\_\_

### Part I –Command Identification

**Directions:** Briefly describe what each of the following statements does.

**Example:** OnFwd(OUT\_A + OUT\_C) – Motors A and C move forward (Power 7)

1) Wait(300); \_\_\_\_\_

2) OnRev(OUT\_A); \_\_\_\_\_

3) SetPower(OUT\_A + OUT\_B, 5); \_\_\_\_\_

4) SetDirection (OUT\_A, OUT\_TOGGLE); \_\_\_\_\_

\_\_\_\_\_

5) task main () \_\_\_\_\_

6) Float (OUT\_A + OUT\_C); \_\_\_\_\_

7) SetOutput (OUT\_A + OUT\_C, OUT\_ON); \_\_\_\_\_

8) Off(OUT\_A); \_\_\_\_\_

### Part II – Explaining Programs

**Directions:** For each of the given programs, answer the questions that follow.

1)

```
task main()
{
    SetPower(OUT_A + OUT_C, 5);
    OnFwd(OUT_A);
    OnFwd(OUT_C);
    Wait(400);
}
```

a) Explain *exactly* what is going on in the program above. **Be specific** about power levels and ports.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Note:** These questions still pertain to the program given on the other side of this page.

b) The program above is downloaded to the RCX. When the “Run” button is pressed, the robot begins to move, and doesn’t stop. Why does it keep moving? How should the program be modified so that the robot stops?

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c) Rewrite lines 5 and 6 of the program (shown below) as one statement.

```
OnFwd(OUT_A);  
OnFwd(OUT_C);
```

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2)

```
// A lamp is connected to Port B  
  
task main()  
{  
    SetPower(OUT_A, 2);  
    OnFwd(OUT_A+OUT_C);  
    On(OUT_1);  
    Wait(Random(100));  
    Off(OUT_B);  
}
```

a) Explain *exactly* what is going on in the program above. **Be specific** about power levels and ports.

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b) When trying to compile the program, a message pops up indicating that there is a *parse error*. What is the problem, and how can it be corrected?

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c) At what power level is motor C running? \_\_\_\_\_

**Directions:** For each of the given programs, answer the questions that follow.

3)

```
task main()
{
    OnFwd(OUT_A);
    OnRev(OUT_C);
    Wait(800);
    OnFwd(OUT_C);
    Wait(300);
    Off(OUT_A+OUT_C);
}
```

a) Explain *exactly* what is going on in the program above. **Be specific** about power levels and ports.

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4) In program below, insert appropriate comments next to each of the double slashes.

```
// A lamp is connected to Port B

task main()
{
    SetPower(OUT_A+OUT_C, 3); // _____
    SetPower(OUT_B, 2); // _____
    OnFwd(OUT_A+OUT_C); // _____
    Wait(Random(400)); // _____
    On(OUT_B); // _____
    Wait(150); // _____
    SetPower(OUT_A+OUT_C, 7); // _____
    OnRev(OUT_C); OnFwd(OUT_A); // _____
    Wait(100); // _____
    Off(OUT_A + OUT_B + OUT_C); // _____
}
```

5) When attempting to compile the following program, 8 errors were detected. Identify, circle, and correct each of the errors.

```
task main()

    SetPWR(OUT_A + OUT_C, 5);

    OnFwd(OUT_A + OUT_D);

    Wait(300A);

    OnReverse(OUT_A)

    WaitFor(85);

    Off(OUT_A, OUT_C);
}
```