

PIC 10A 1A

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Today...

- Exercise Problem – Grade Calculator v.1 (Cont'd)
- HW Hints
- The `while` Loop

Exercise – Grade Calculator ver.1

- Write a program that will calculate a student's final score in some class on the following dual grading system:
- Assume that there will be 3 homework assignments total, and the lowest homework score will be dropped.
- The maximum of the two scores obtained from the two schemes will be the final score
- In addition to printing the final score, you should also determine the letter grade based on the following scale:

Scheme A	Scheme B
Midterm Exam 30%	Midterm exam score dropped
Final Exam 40%	Final Exam 70%
Homework 30%	Homework 30%

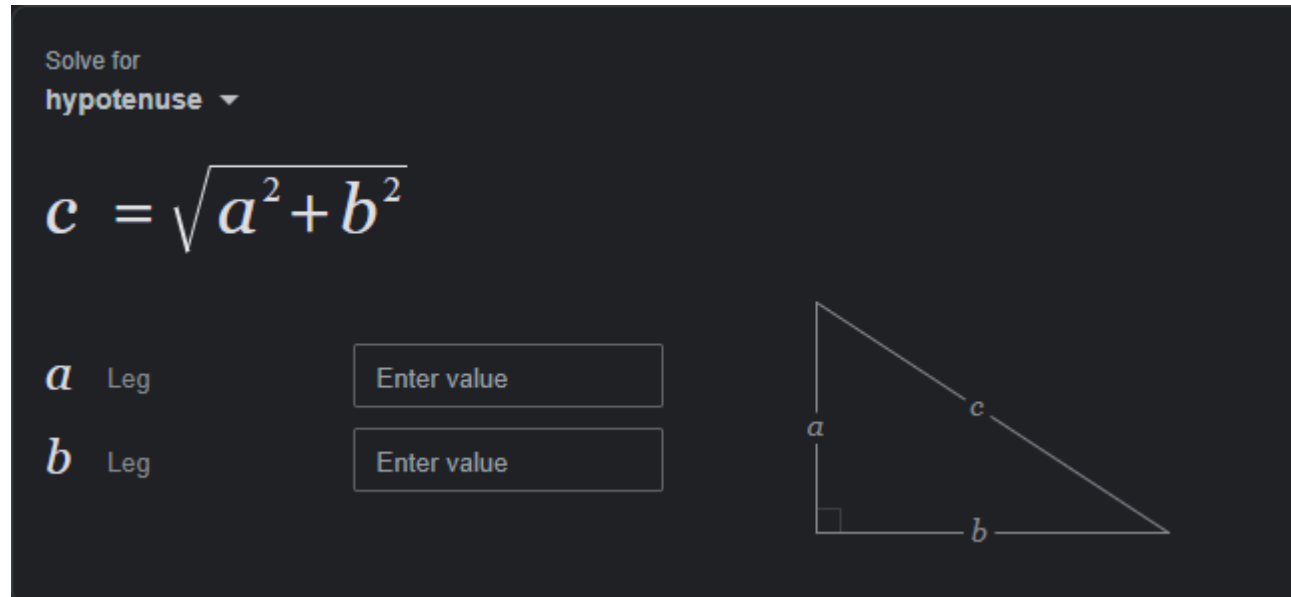
90 <= A <= 100, 80 <= B < 90, 70 <= C < 80, 60 <= D < 70, 0 <= F < 60.

- Input and output should be exactly of the following format:

```
Please enter the midterm score (0 - 100): 80.0
Please enter the final exam score (0 - 100): 85.0
Please enter the homework 1 score (0 - 100): 80.0
Please enter the homework 2 score (0 - 100): 90.0
Please enter the homework 3 score (0 - 100): 40.0
Your final score based on Scheme A is 83.5
Your final score based on Scheme B is 85
Your final score is 85
Your course grade is B
```

HW1 Hints

- Exercise 1: Rectangle
 - You probably can get the user input, and set two variables for length and height
 - Area = length*height
 - Perimeter = 2*(length + height)
 - For the diagonal, use the Pythagorean theorem (this is where you need <cmath>)



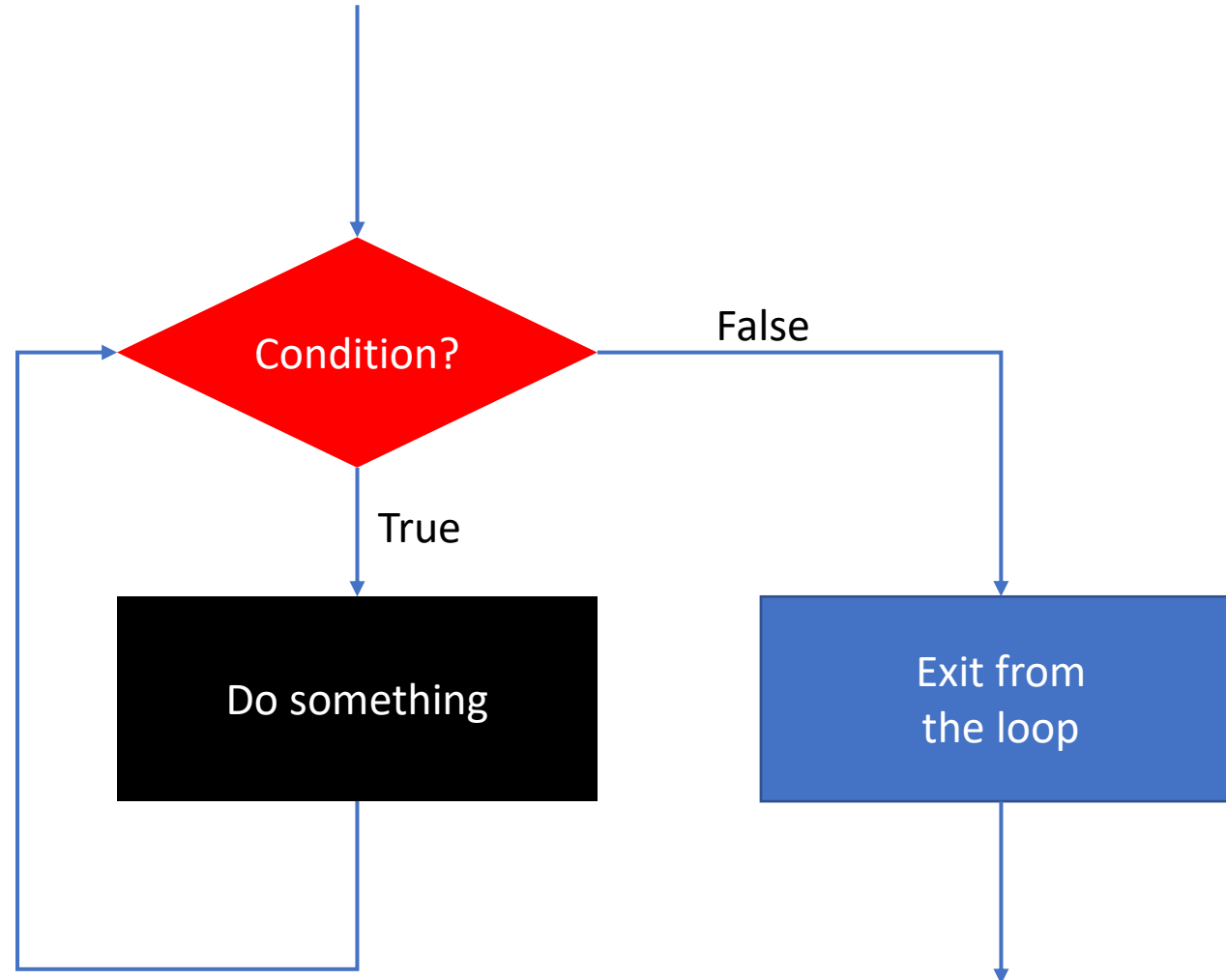
HW1 Hints

- Exercise 2: Num2Month
 - Use the hint in the HW instruction
- More hints – Consider the following (simplified) problems:
 - Say, you need to return the first letter of the month names (J, F, M, A, M, J, J, ..., N, D)
 - Then you can define

```
const string str = "JFMAMJJASOND";
```
 - If the user inputs 10, we need to output “O” – How can we do that? (beware *off-by-1 error*)
- Now, say you want the first two characters (Ja, Fe, Ma, Ap, ..., No, De)
 - Which string can you use for this problem?
 - How can you subtract the substring?
- Finally, when you need the full month names, you can use the “white-space” trick in the HW instruction

Review on **while** loop

- Flow chart



Exercise Problem (**while**)

2. Consider the following program.

```
#include <iostream>
using namespace std;

int main() {
    int iter = 0;
    int n;
    cin >> n;
    while(iter < n) {
        iter += 2;
        cout << iter << endl;
    }
}
```

Which of the following choices most accurately describe the functionality?

- A. Print all positive even numbers less than the input.
- B. Print all positive even numbers less than or equal to the input.
- C. Print all positive even numbers less than or equal to the input + 1.
- D. Print all positive even numbers less than or equal to the input + 2.
- E. None of the above.

Exercise Problem (**while**)

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using namespace std;

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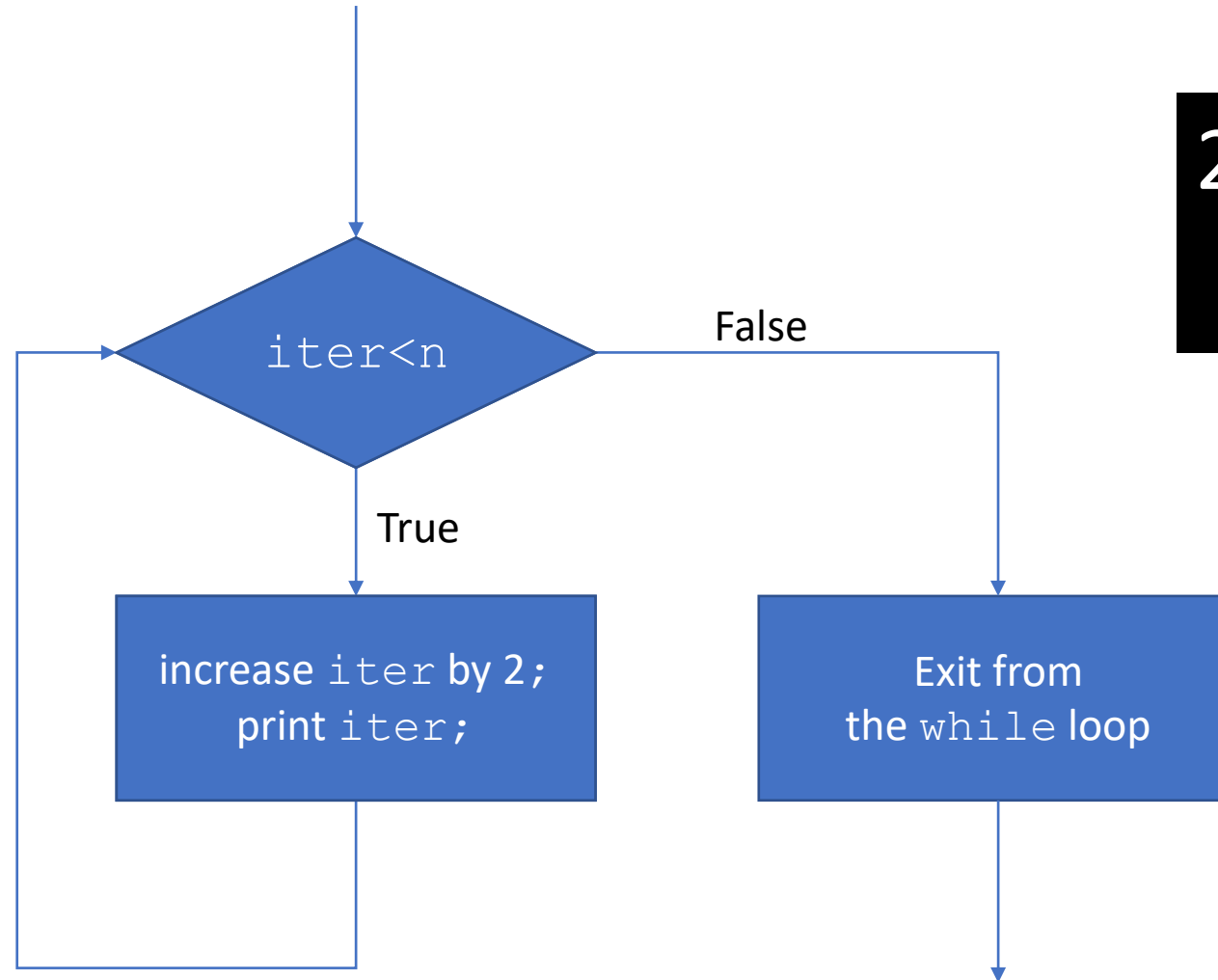
- A. Print all positive even numbers less than the input.
- B. Print all positive even numbers less than or equal to the input.
- C. Print all positive even numbers less than or equal to the input + 1.
- D. Print all positive even numbers less than or equal to the input + 2.
- E. None of the above.

- Answer: C
- Execute the statements in the loop only when $iter < n$, but $iter$ immediately becomes $iter+2$
- Consider the following examples →

Exercise Problem (**while**)

- Ex1: $n=4$

```
1. iter=0
2. iter(0)<4?
3. iter←2
4. print 2
5. iter(2)<4?
6. iter←4
7. print 4
8. iter(4)<4?
9. exit
```

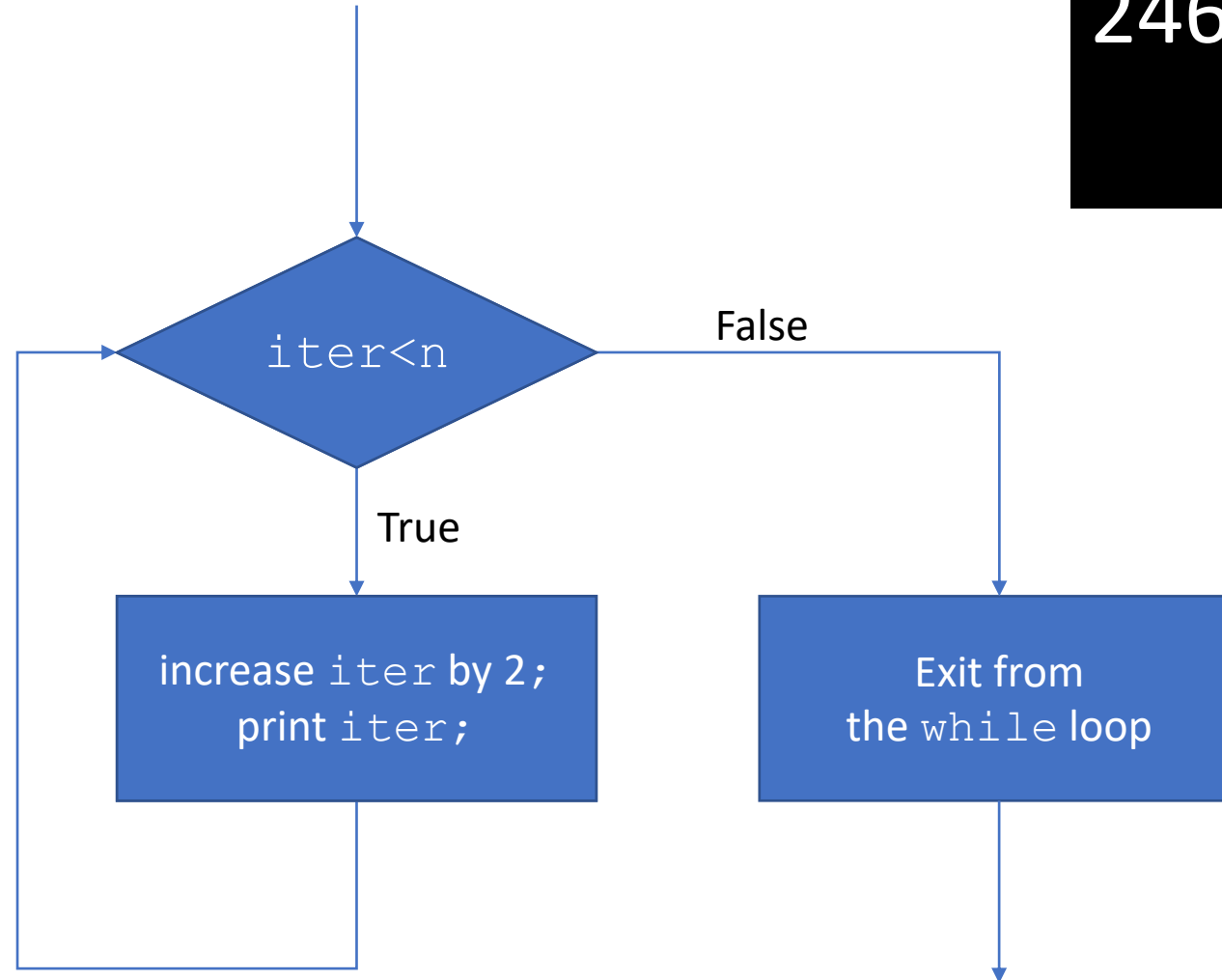


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Exercise Problem (*while*)

- Ex2: $n=5$

```
1. iter=0
2. iter(0)<5?
3. iter←2
4. print 2
5. iter(2)<5?
6. iter←4
7. print 4
8. iter(4)<5?
9. iter←6
10. print 6
11. exit
```



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Your Feedback is welcome

- Don't hesitate to give a feedback on the discussion
- You can use a link in BruinLearn (Google Form)



Click this link

At this point, you may want to request
“more hw hints”,
“more advanced examples/exercises”,
“more details on the classroom examples”, etc.
Please let me know what you want!