C程序设计基础

Introduction to C programming

Lecture 2: Algorithms

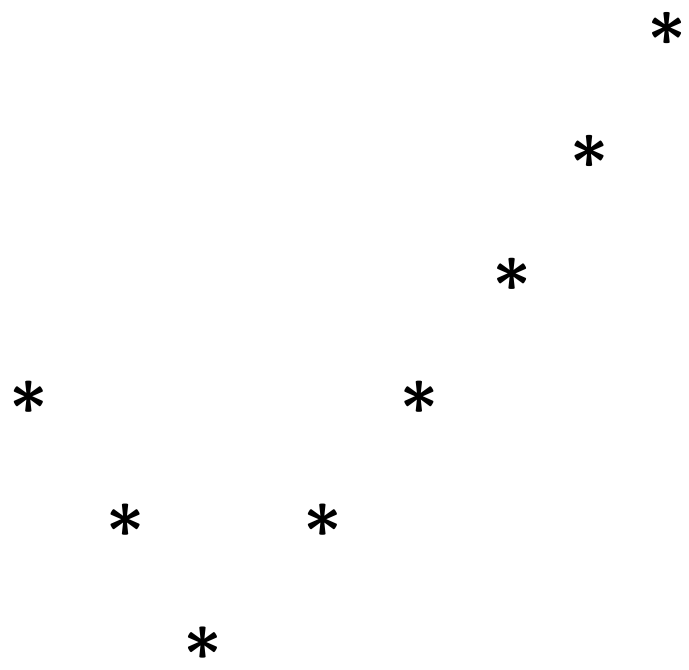
Homework2

```
/* nogood.c -- a program with errors */
#include <stdio.h>
int main(void)
(
int n, int n2, int n3;
/* this program has several errors
n = 5;
n2 = n * n;
n3 = n * n 2;
printf("n = %d, n squared = %d, n cubed = %d\n", n, n2, n3)
return 0;
)
```

- 将此代码调试正确，原始代码从BlackBoard下载

Homework2

Write a program that uses `printf` to display the following picture on the screen:



Homework2

Write a program that compute the volume of a sphere with a 10-meter radius, using the formula $v = 4/3\pi r^3$. Write the fraction 4/3 as 4.0f/3.0f. (Try writing it as 4/3, and check what happens)

Hints: r^3 can be written by r*r*r

Homework2

Many studies suggest that smiling has benefits. Write a program that produces the following output:

```
Smile!Smile!Smile!
Smile!Smile!
Smile!
```

Have the program define a function that displays the string `Smile!` once, and have the program use the function as often as needed.

Homework2

In C, one function can call another. Write a program that calls a function named one_three() . This function should display the word one on one line, call a second function named two() , and then display the word three on one line. The function two() should display the word two on one line. The main() function should display the phrase starting now: before calling one_three() and display done! after calling it. Thus, the output should look like the following:

```
starting now:
one
two
three
done!
```

Homework2

- 假定f(x) 在[a, b]区间单调且有一个解使得f(x)=0，利用二分法可以得到此解。请用传统流程图、N-S图、伪代码三种方式表示该算法。

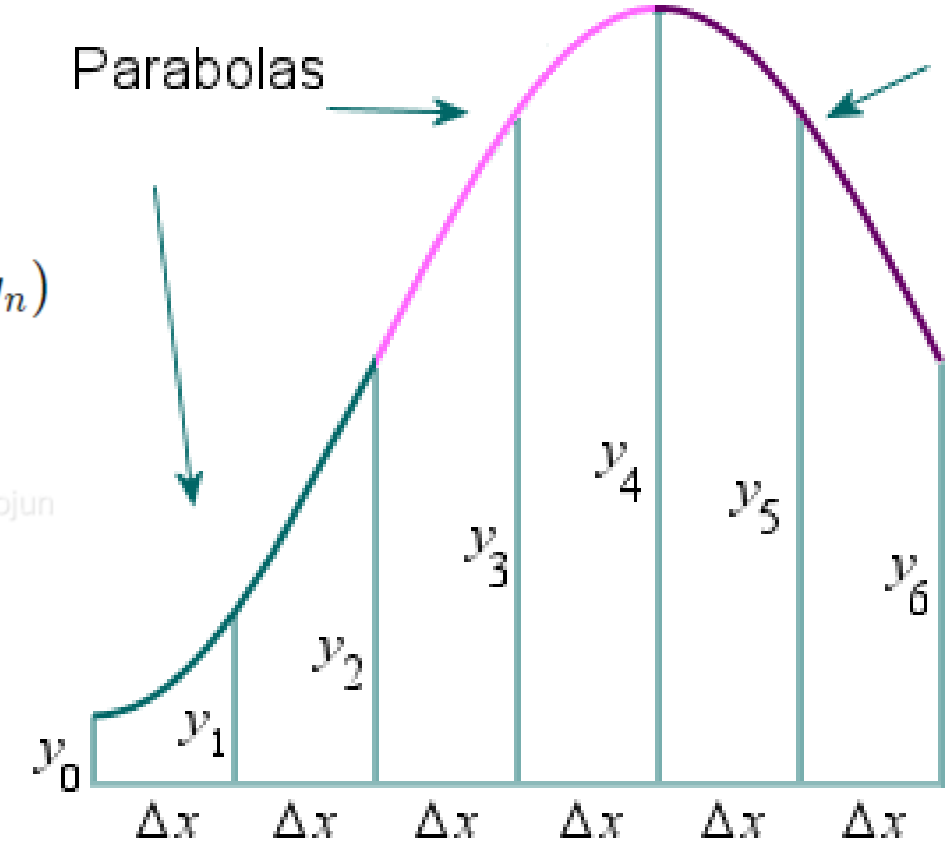
Homework2

- Simpson法则可以表示为（n必须为偶数）：

$$\text{Area} = \int_a^b f(x)\,dx$$

$$\approx \frac{\Delta x}{3}(y_0 + 4y_1 + 2y_2 + 4y_3 + 2y_4 + \ldots + 4y_{n-1} + y_n)$$

$$\text{where } \Delta x = \frac{b-a}{n}$$



- 请用传统流程图、N-S图、伪代码三种方式表示该算法。