Programming Using C

Instructor: Chien-Ho Ko

General Information

- **Course website:數位學習平台**
- **18 sessions**
- **Office hours: 10:10-12:00 Tuesdays & by appointment**
- **RE 3013**
- **ko@mail.npust.edu.tw**

Objectives

- **Students understand how to program using C language and know how to use it to solve problems.**
  - **C language**
  - **Solving problems using C**

Grading

- **Class attendance** **10%**
- **Quizzes** **10%**
- **Mid-term project** **20%**
- **Final-project** **20%**
- **Mid-term exam** **20%**
- **Final exam** **20%**

Milestones

- **04/09-Quiz (Paper)**
  - **Class materials before the day**
- **04/12 & 04/16-Mid-term exam (Machine)**
  - **Class materials before the day**
- **04/19 & 04/23-Mid-term presentation**
  - **How to solve the final project**

Milestones

- **06/11-Quiz (Paper)**
  - **Class materials before the day**
- **06/14 & 06/18-Final Exam (Machine)**
  - **Class materials before the day**
- **06/25-Final project**
  - **Robot programming competition**

Project Description

- **LEGO NXT robot**

NXT

Touch sensor

Distance sensor

Sound sensor

Servo motors

Project Description

- **Useful Links**
  - **TWLUG Forums**
    - **http://www.twlug.info/forums/**
  - **NXC**
    - **http://bricxcc.sourceforge.net/nbc/**

Project Description

- **Mid-term presentation**
  - **How to solve the final project**
    - **Strategy**
    - **Procedure**
  - **Four people a group**
    - **Oral presentation**
    - **Power point**

  (See pictures)

Project Description

- **Final project**
  - **Robot competition**
  - **Challenge**

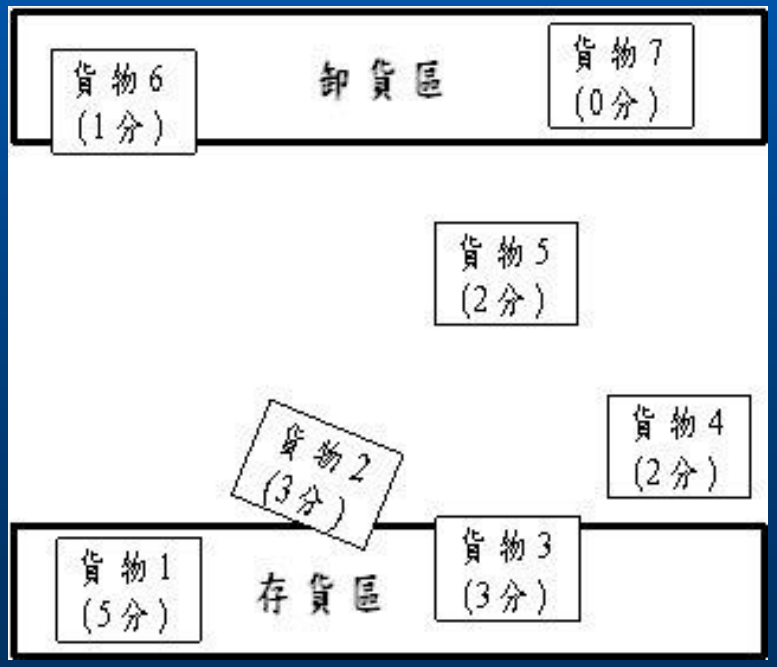
1. **Drive toward to goods**
2. **Pick up goods**
3. **Drive toward to storage**
4. **Put down goods**

Project Description

- **Final project**
  - **Competition platform**

Project Description

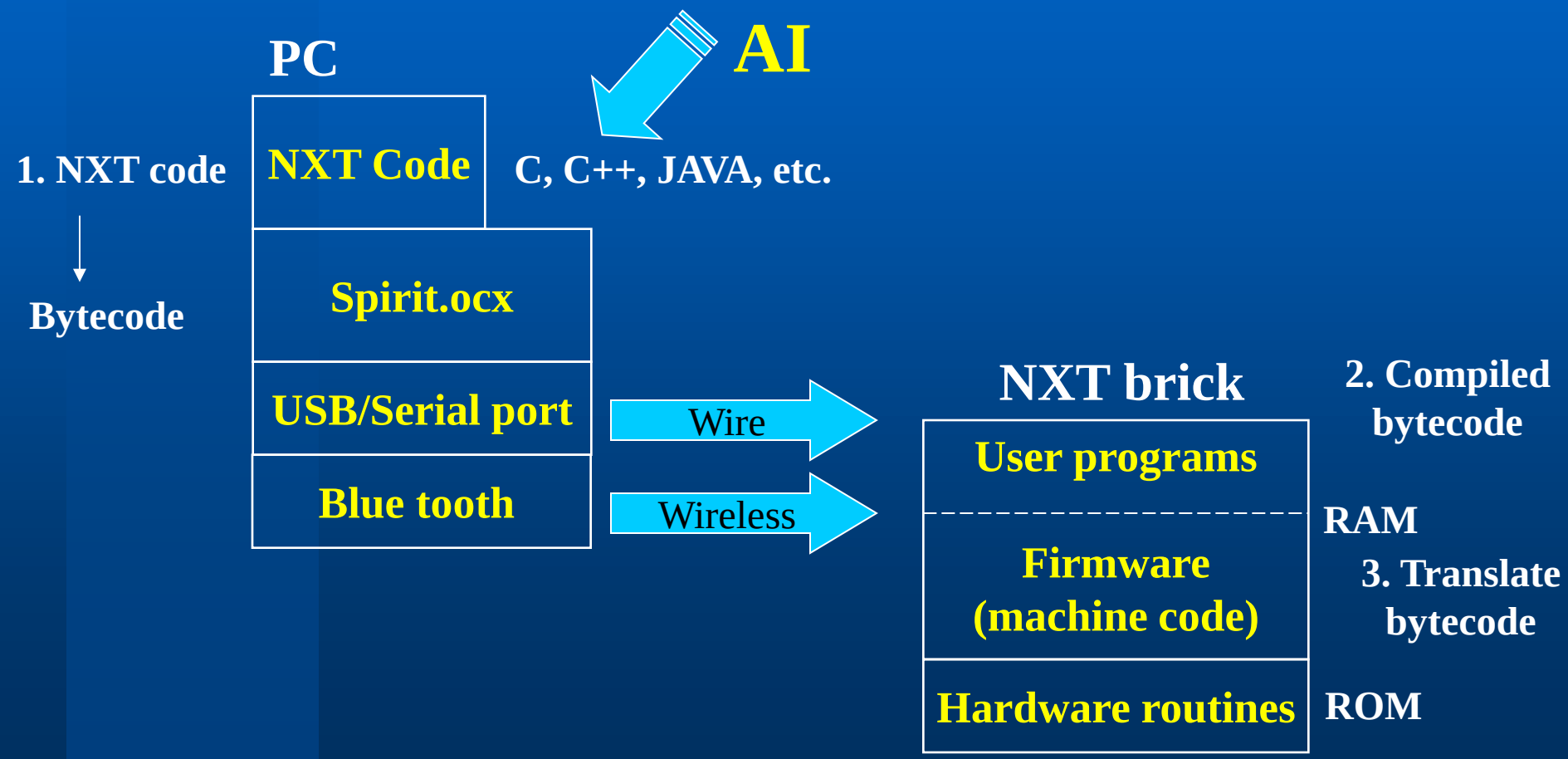
- **Final project**
  - **Scoring**



Project Description

- **Grading policies**
  - **Complete the mission in 2 minutes**
  - **Participators 60**
  - **Within 80% +10**
  - **Within 50% +10**
  - **Within 10% +10**
  - **Depend on status +10**
- **Awards and prize**

NXT Software Architecture



Previous Developments

- **Robot show**
- **Previous robot competitions**
  - **2006**
  - **2007**
  - **2008**
  - **2009**
  - **2010**
  - **2011**

Contents

- System development process
  - How to develop software systems
- Introduction to C
  - Why C, How C works
- Selections
  - if, then
- Repetitions
  - while, do loop, for

Contents

- **Arithmetic calculations**
  - **Arithmetic operators & priorities**
- **Modular programming and functions**
  - **Function calls**
- **Formatted input and output**
  - **Formats for inputs and outputs**
- **Pointer**
  - **Pass values by pointers**
- **Array**
  - **Array structures**

Teaching Style

- **Example of drawing triangle and rectangle**
  - **A regular example in C**
- **Example of LEGO robot**