Otto’s instruction set:
1. Stand up
2. Sit down
3. Raise arm
4. Lower arm
5. Open door
6. Reset memory A
7. Reset memory B
8. Reset memory C
9. Add one to Memory A
10. Add one to Memory B
11. Add one to Memory C
12. Subtract one from Memory A
13. Subtract one from Memory B
14. Subtract one from Memory C
15. Take step
16. Turn right

Test: is Your Number in Memory __ value?
   Yes:
   No:

Test: is Your Number in Memory __ zero?
   Yes:
   No:

Test: Are you touching anything?
   Yes:
   No:

Test: Are you touching a chair?
   Yes:
   No:

Repeat x times
20. Goto s
21. Goto s
22. Stop
23. Copy memory ___ to Memory ____.

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Question (30P): Above figure represents a square room with a random number of chairs placed in a way that it forms a rectangle. Assume chairs are not touching walls. Write an algorithm that enables Otto to count number of chairs and stops. (The memory C should contain number of chairs when Otto stops)

You are expected to write as small as possible code.
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) An ASCII file is indicated by which extension?
   A) HQX  B) TXT  C) AVI  D) RA

2) A platform is defined by which two key elements?
   A) Server and peripherals  B) Processor and operating system
   C) Processor and peripherals  D) Server and operating system

3) Letters, numbers, and special characters (such as *, $, +, and &) are collectively referred to as ________ characters.
   A) mixed  B) alphanumerical  C) compound  D) assorted

4) What small computers control the operation of peripheral devices?
   A) Microcomputers  B) Microprocessors
   C) Device controllers  D) Bus masters

5) In a digital signal, how is the on state expressed?
   A) False  B) One  C) True  D) Zero

6) Which of the following is an example of a presentation software application?
   A) Lotus 1-2-3  B) Microsoft PowerPoint
   C) Ami Pro  D) Corel WordPerfect

7) Which of the following types of operating systems allows the concurrent execution of more than one program at a time?
   A) Multi-user  B) Multitasking  C) Multiprocessor  D) Time-sharing

8) What is the only language that is understood by a computer?
   A) Processor  B) BASIC  C) Assembly  D) Machine

9) Piloting an airplane is an example of what type of gaming software?
   A) RPG  B) Strategy  C) Simulation  D) Edutainment

10) Transferring a file from a remote computer to a personal computer is called:
    A) uploading.  B) downloading.  C) acquiring.  D) freeloading.

11) CISC means:
    A) coded instruction set computer.
    B) common interactive sequential computer.
    C) complex instruction set computer.
    D) completely integrated serial computer.
12) What software application uses a grid for entering rows and columns of data?
   A) Presentation                B) Word Processing
   C) Spreadsheet                 D) Desktop Publishing

13) What type of software takes control of the PC on start up, and then plays a central role in all interactions with it?
   A) Integrated                  B) Application               C) System                D) Utility

14) Which of the following is the most popular encoding system for PCs and data?
   A) ASCII                        B) ANSI                     C) EBCDIC                 D) Unicode

15) What software controls everything that happens in a computer?
   A) Operating system            B) Control Program Monitor (CPM)
   C) Graphical user interface (GUI) D) Applications

16) What is the name of the single circuit board that provides the path through which the processor communicates with memory components and peripheral devices?
   A) Masterboard                B) Motherboard              C) Bus master              D) Circuit master

17) Which of the following is an open source operating system?
   A) Windows XP                B) Linux                    C) MS-DOS                  D) Mac OS X

18) What electronic signals are continuous waveforms that vary in frequency and amplitude and can be used to represent information from sound and numerical data?
   A) Packet                     B) Hybrid                   C) Analog                  D) Digital

19) Which of the following is NOT a function of the control unit?
   A) To read and interpret program instructions
   B) To direct the operation of internal processor components
   C) To monitor network connections
   D) To control the flow of programs and data in and out of RAM

20) Which numbering system is used as shorthand to display the binary contents of RAM and disk storage?
   A) Binary (base-2)            B) Hexadecimal (base-16)
   C) Decimal (base-10)          D) Octal (base-8)