Hamilton-Senior lab-off-site learning packet day 5

Instructor Mark Hamilton   **Date**_____

Program/Class   AEM SR

Instructional Objective(s):

Materials:
White board

Method of Instruction:
Research

Activities:
Read through handouts, watch videos and do activities
Answer the questions provided

Closure:
Answer questions on the last page

Assessment:
Answer sheets will be collected and graded.

Objectives:

1. Students will list 2 codes used in program ending lines with 80% accuracy

Don't you just hate it when you watch a movie and it has a terrible ending? You know what I'm talking about, the type of movie ending that just leaves you hanging there trying to figure out what really happened.
Like did everybody die or what? Did they ever find the body? Who was that guy at the end and where did he come from? Did everyone turn into a zombie or what?
Nobody likes to be left hanging there to figure it out on your own. We watch movies to be entertained not write our own ending. I want my money back!!!

Well guess what? Your CNC machine doesn't like to be just left hanging there either.
What if a CNC mill could talk?
Would it ask you questions like,
- Hey are you just going to leave me hanging here 2 inches above the part?
- Hey are you going to leave my spindle run all night? I'm getting tired here!
- Hey programmer, are you just going to let this coolant spray all over me? Shut that stuff off it smells bad!!!

Well today we are going to go over a couple of codes to use at the end of a program.

Objective 1: Two codes used in the program ending lines
1. The G28 is return to **machine zero** thru reference point.
   a. This is the **code** you use to send the machine to the home position after you have completed an operation or a program.
   b. You use the G28 by typing in G28 and then giving the machine the **letter** of the axis that you want to send to the **home** position.
   c. Example: G28 Z5.0 ;
   d. This will send the **machine** to 5.0" above the set Z zero point and then continue to move the machine to the Z home position.
   e. Next: G28 Y0. ;
   f. This would then send the machine to the Y0. And then continue out to the Y **home** position.
      i. Now after a long day on the job you want to go home.
      ii. How would you feel if your boss said alright just hold this broom and swish it around here in the same place all night, we will all be back in the morning.
      iii. You would be like no way man, I'm going **HOME** dude, I'm done with this place for one day!!!
   g. Why do you think it would be wise to send the Z axis home first?
      i. Well, I'm waiting? Why send Z home first?
      ii. Don't just read ahead, try to figure it out!!
      iii. What does Z think he is better than all the other letters?
      iv. Is he sick of always being last?
      v. Ok go ahead and look.
   h. You send **Z home** first to get the tool out of the way of interference when bringing the table out in the Y axis.
      i. And now you are thinking I should have known that, it was obvious!!

2. The M30 line is program end and reset.
    a. This line ends the program and resets the program in the control back to the first line.
    b. In many of the newer machines the M30 cancels all canned cycles and cancels all codes that are modal, **BUT NOT IN ALL MACHINES.**
        i. modal codes are codes that stay active until they are shut off or changed.
        ii. Some of the older machines reset to the beginning but they do not cancel canned cycles or modal codes.
        iii. I know this because the day shift guy at the shop I worked at years ago said to me hey hammy, you forgot to cancel your drill cycle last night so when I started a new part it started drilling a hole right in the center of it. Way to go!!
        iv. I said your welcome. But he dint think it was funny. I still do. Lol
    c. It may be necessary to use the code that cancels the canned cycles at the end of the program before using the M30.
    d. The M30 code should appear at the end of each program that you write.

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Senior lesson

Name_____

1. What does it mean when a code is modal?

2. Why is it important to shut of codes that are modal or canned cycles at the end of the program?

3. What does the G28 do in the program?

4. Why is it wise to send the Z axis to the home position first?

5. What does the M30 do in the program?

6. Does an M30 reset modal codes and canned cycles in all CNC machines?