APS 165 Lecture 6 Notes

Last lecture: math library and random number generation

Today: random number generation between a range and if statements.

## Recall:

0% 
$$S = 0$$
  
1%  $S = 1$  repeats  
2%  $S = 2$  again!  
3%  $S = 3$   
7%  $S = 4$   
 $S = 0$ 

Therefore, %5 on any number will return a number between O & 4.

and % j on any other number will produce a number between O & j-1

To produce random # between 0 and 5, we do this

rand () % 6

To produce a random # between 1 and 6 we do this

rand () % 6 + 1

To produce a random # between [MIN, MAX]
rand () % (MAX-MIN+1) + MIN

as true or false

E.g. \* > 0, height 7= width

E.g. if (height == width)

printf ("This is a square \n");

else

printf ("This is a rectangle In");

What can you do with "relationed operators"?

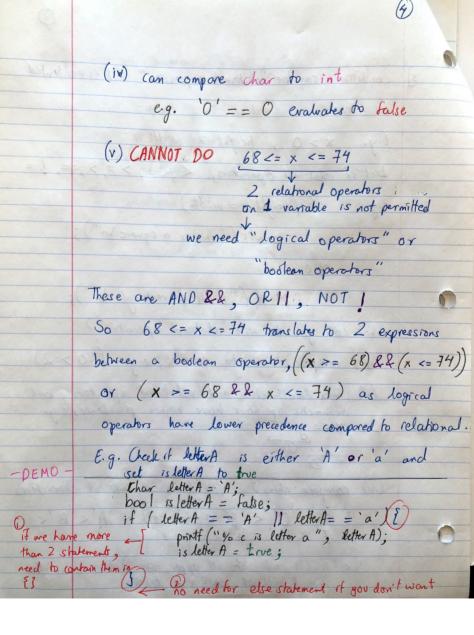
- (i) compore int to double, e.g. (7.0 >=2)
- (ii) mix anthretre and relational operators, but arithmetre operators have higher precedence, e.g. X <= y + 5
- (iii) compare characters (or the fiscil code of characters)

  ' < '0' < '1' < ..... '9' < `A' < `B' < --..

  < 'Z' < `a' < `b' < --.. 'z'

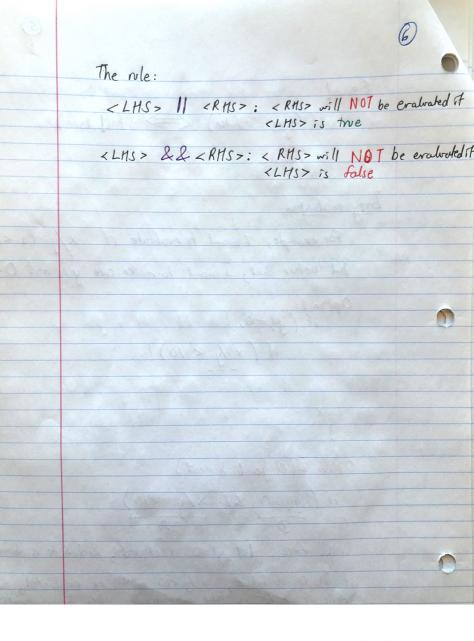
< £ < a < b < --- ?

i.e. ASCII code of all upper case letters is smaller than ASCII of small case letters.



E.g. 1 if (done = = folse) ( if (! done) Lazy evalvation For example, I want to evaluate it X/y 13 < 10 but before that, I want to make sure y is not O. Optron 1: if (y1=0) { if (x/y < 10) { Option 2 (elegant & reat): if (y!=0 &k x/y <10) in the case, 1st y! = 0 is checked, 2nd & & is observed if y!=0 is false, x/y <10 will not be evaluated, since sesult of 22 is false cutomatically, when I are venents

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Roylette Example - DEMO-// User needs to guess that a random# between I and 11 36 will be even or odd. If the user guess // correctly, they win, else they loose.

# include < time.h > → to use time () function

# include < stdro.h > → to use printf and scanf

# include < stdlib h > → to use rand) and srand() # mclude <stdbool.h > -> to use bool, twe, false int main (void) { int gress; Srand (time (NULL)); while (true) { points ("Enter your bet, O har even and 1 har odd; "); scanf ("%d" Lyvess); int spin = rand() %36+1; if (spin 1.2 == guess)

pointf (" you win!");

else

pointf (" you lose: ("); relm 0;