

Proposed Solution ideas for the Cases

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Following ideas were proposed by different teams for the below mentioned cases:

Case of Spam Detection (Lexical Analysis)

- Idea to do the scanning of the content twice in the first scan removal of extra spaces, punctuations within the words, and in the next scan matching of each token against bag of spam words (keyword searching).
- Deterministic Finite Automatas are drawn by students for the keywords/spams.
- Suggestion to make the count the punctuations as an indicator of spam.
- Idea to use ngrams approach which takes advantage of contextual phrase information (e.g. "buy now") was also proposed.
- For statistical errors different solutions presented were: keeping a count on good words to match against a threshold, weighing the good words against spam words (a significant presence of both can indicate spam) and keeping a count of location of occurrence of good words.
- For composite attacks, ideas mentioned were use of prefix detection to detect spam by demonstrating the use of REJECT construct of YACC as done in the class.
- For invalid URL, suggestions to do various forms of normalization of URL were discussed and for spam present in attachments like images, discussions were done to process the image to extract set of tokens from properties of image.

Case of Human-Robot Chess play (Syntax Analysis)

- Few teams presented the view of making it essential for humans and robot to operate in their own workspace like waiting of the robot's arm to finish human's move.
- Some included the productions of the details of robot's behavior in handling chess pieces like touching, holding, sliding and reacquiring pieces when they fall.
- A few did work on providing equal chances to both players and ending the game on either a human win, robot win or a draw.
- Some of the team focused on working on the mechanics of the robot's arm like stretching, turning and grasping the piece.
- Students also worked on the grammar structure to reset the board like making space on the home square if some piece is already occupied.
- A few of the teams worked on including productions for different chess strategies like for an passant move taking the captured pawn and moving its own pawn to destination square.
- Some presented semantic actions also with the grammar.

- Teams also build motion parser using different bottom up parsing techniques discussed in the class.