Coding with ChatGPT: activities

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Activity 1. Get Ready
Login to ChatGPT. Use GPT-4o.

Activity 2. Learn HTML, CSS, JavaScript
Survey: Know HTML, CSS, JavaScript?

Prerequisite:
- Login to ChatGPT.
- Use text editor such as NotePad, NotePad++

Learning outcome:
- Use ChatGPT to learn.
- Progressively improve code.

	Prompts	Note
1	Act as a computer science professor. I am learning HTML. Give me the Hello World example.	Copy the code. Paste to a Text Editor. Save as **hello.html**. Click on it to open in a browser.
2	Add a short paragraph to this page about the history of HTML.	**Save** to the same file. **Refresh** browser.
3	Show me how to add links.	
4	Help me understand CSS by changing the font and background color.	
5	Show me how JavaScript works by adding a button to this page, which shows a message when clicked.	

Activity 3. Shooter game.
Learning outcomes:
- Resubmit prompts to get different code.
- Revise previous prompts.
- Refine iteratively
- GPT-4 is far better than any other models

	Prompts	
1	Write code for a simple shooting game that runs in the browser. Put everything in one file.	Resubmit a few times. See the difference in response.
2	Write code for a shooting game that run in the browser. Put everything in one file. This game will feature a player at the bottom of a 400x400 playing area. The player can be moved left or right using the arrow keys. When the space key is pressed the player shoots a projectile. Targets appear randomly on top of the screen and move down. Targets disappear after being hit by projectiles.	Revise the first prompt.

Resubmit to get a better working version. |
3	Change background color to dark grey.	
4	Instead of using the keyboard, the player moves horizontally using the mouse and shoots when I left click.	
5	Add a score counter.	

6	If the player is hit by the targets, the game is over. User can restart.	

Activity 4. Snake game

	Prompts	Note
1	Write code for the snake game as one file that runs in a browser.	Resubmit a few times. See the difference in response.
2	The snake is just one square. Make it longer.	Revise the first prompt. Resubmit to get a better working version.
3	The snake went out of the boundary.	
4	Can we add a score reporting the food count?	

Activity 5. To-do list web page

	Prompts	Note
1	Write code for a to-do list app that runs in a web browser.	Resubmit a few times. See the difference in response.
2	Write code for a to-do list that runs in a web browser. Tasks can be entered into a box. Once I hit enter, the task appears below the box, along with a checkbox.	Revise the first prompt. Resubmit to get a better working version.
3	Once a task is checked, change the font background to green.	
4	When a task is checked, show an encouraging message like "Great job!" in large size that disappears on its own.	
5	Add today's date and a timer showing current time.	
6	Customize by yourself.	

Activity 6. Analyzing data using ChatGPT: EDA

Prerequisite:
Download the heartatk4R.csv file from the materials/datasets/ folder of the Google Drive (BIT.LY/jacksdata)
Learning outcomes:
- Prompt engineering for data science
- Include data description in prompts
- Run code using in RStudio

	Prompts	Note
1	Act as an experienced data scientist. Write R code that I can use to analyze data on my laptop. Read the file heartatk4R.csv in the current folder and print a small part of it. The first few rows of the data are: diagnosis sex outcome died charges length age 41041 F 122 0 4752 10 79 41041 F 122 0 3941 6 34 41091 F 122 0 3657 5 76 41081 F 122 0 1481 2 80	
2	Create summary statistics of the data.	
4	Plot the distribution of age using a histogram.	specific
5	Change color to red.	refine

6	Create a plot to compare the age distribution between male and female.	generic
7	Create a scatter plot charges vs. length.	
8	Build a model to predict charges.	

Activity 7: RTutor

Go to https://RTutor.ai

Upload the heartatk.csv file.

Go to EDA, generate report.

- Show me the distribution of charges.
- Plot the distribution of age by sex and outcome.
- Create a density plot of age by sex. Split into panels by outcome
- Show me the relationship between charges and length.
- remove missing values and calculate the correlation between length and charges.
- create a regression model to predict charges and show me the diagnostic plots.

Video