You will receive a dataset (JobInterviewAssignmentData.CSV) containing demographic variables, cognitive test scores, and structural MRI measures (including normalized whole-brain volume, nWBV) from older adults with and without dementia. Your task is to explore the dataset and carry out any analyses you consider meaningful. You are expected to present your observations during the job interview.

This assignment evaluates how you approach an unfamiliar dataset, the kinds of questions you generate, how you justify your analytical choices, and how creatively you work with the available information. There are no prescribed methods or expected "correct" results. Background Cognitive aging involves changes in both brain structure and cognitive performance. nWBV is a widely used biomarker of brain aging. Cognitive functioning can be represented by scores such as the MMSE. The dataset includes adults aged approximately 60–96 from a cohort that contains both cognitively healthy individuals and participants with dementia.

Your Task
Explore the data and decide which research questions are interesting or important. You may examine relationships between structural brain measures and cognition, compare diagnostic groups, or explore age-related patterns. These examples are not exhaustive. You are free to define and motivate your own analytical focus.

Deliverable
Prepare a brief presentation to report your observations during the interview:
- The questions you chose to investigate
- Your analytical approach and justification
- Key results and visualizations
- A short interpretation highlighting limitations or open questions

You may use any software or statistical tools you prefer.

Metadata Aging and dementia
- Subject Number
- Visit: Multiple visits for scanning but here limited to 1
- Sex: Sex (M or F)
- Age: Age at time of image acquisition (years)
- Age groups: 0= 60-70, 1 = over 70yo
- Educ: Years of education
- MMSE :Mini-Mental State Examination score (range is from 0 = worst to 30 = best) (Folstein, Folstein, & McHugh, 1975)
- CDR: Clinical Dementia Rating (0 = no dementia, 0.5 = very mild AD, 1 = mild AD, 2 = moderate AD) (Morris, 1993)
- Dementia Groups: Demented, Nondemented (converts are excluded)

- SES: Socioeconomic status as assessed by the Hollingshead Index of Social Position and classified into categories from 1 (highest status) to 5 (lowest status) (Hollingshead, 1957)
- eTIV: Estimated total intracranial volume (cm3) (Buckner et al., 2004)
- nWBV: Normalized whole-brain volume, expressed as a percent of all voxels in the atlas-masked image that are labeled as gray or white matter by the automated tissue segmentation process (Fotenos et al., 2005). This serves as a structural marker of brain atrophy. Lower values indicate more atrophy and less preserved brain tissue.
- ASF: Atlas scaling factor (unitless). Computed scaling factor that transforms native-space brain and skull to the atlas target (i.e., the determinant of the transform matrix) (Buckner et al., 2004)