CSE231 Operating System, Quiz 01 Monsoon 2023
Time allocated: 4pm – 4:20pm

Name	
Roll Number	

Instructions:

- This **is a closed book and closed notes quiz. Please be aware of strict plagiarism policy.**
- For questions requiring justification, please be as concise as possible. 2-3 sentences would be the ideal size of a justification. No extra pages will be provided.

Question 1: (2 mark) "Statically linked hello-world.c executable will be smaller in size than its dynamically linked executable". State True or False, and provide one line justification.
Answer:

False. Statically linked file will be bigger as it contains the machine code of the program as well as that of the library methods it uses.

TA: No partial marks

Question-2: (2 marks) Which of these file(s) are "touched" by the linker, and which one(s) by the loader: a) relocatable file, b) executable file, and c) shared library.
Answer:

Linker: All three of the above.   **[TA: +1 marks]**
Loader: Executable file and shared library.   **[TA: +1 marks]**

Question-3: (2 marks) Which of these sections will contain the string ".text": a) .text, b) .data, c) .strtab, and d) .shstrtab? One line justification.
Answer:

".shstrtab" section **[TA: +1 marks]**. As it contains the name (string) of all the sections. **[TA: +1 marks]**

Question-4: (2 marks) List out the ELF structure name(s) and its member(s) that would help in reading section header tables.
Answer:

Elf32_Ehdr **[TA: +0.5 marks]**: e_shoff **[TA: +0.75 marks]**, e_shnum**[TA: +0.75 marks]**

Question-5: (2 marks) What happens to EBP and ESP during a method's a) epilogue and b) prologue. One line summary for each of the two sub-questions.

Prologue: Old EBP value is saved in stack slot currently pointed by ESP **[TA: +0.5 marks]** and EBP is updated to point to this new location **[TA: +0.5 marks].**
Epilogue: Stack slot storing the old EBP value is popped and loaded into EBP register **[TA: +0.5 marks]** and ESP is adjusted/moved to the point to the last slot in the stack frame of the caller. **[TA: +0.5 marks]**

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Question 1: (2 mark) "Dynamically linked hello-world.c executable will be smaller in size than its statically linked executable". State True or False, and provide one line justification.
Answer:

True. Dynamically linked file will be smaller as it only contains references (pointers) to the library method instead of a copy of the code

TA: No partial marks

Question-2: (2 marks) Which of these file(s) are "touched" by the linker, and which one(s) by the loader: a) relocatable file, b) executable file, and c) shared library.
Answer:

Linker: All three of the above.   **[TA: +1 marks]**
Loader: Executable file and shared library.   **[TA: +1 marks]**

Question-3: (2 marks) Which of these sections will contain the string ".strtab": a) .text, b) .data, c) .strtab, and d) .shstrtab? One line justification.
Answer:

".shstrtab" section **[TA: +1 marks]**. As it contains the name (string) of all the sections. **[TA: +1 marks]**

Question-4: (2 marks) List out the ELF structure name(s) and its member(s) that would help in reading program header tables.
Answer:

Elf32_Ehdr **[TA: +0.5 marks]**: e_phoff **[TA: +0.75 marks]**, e_phnum **[TA: +0.75 marks]**

Question-5: (2 marks) What happens to EBP and ESP during a method's a) epilogue and b) prologue. One line summary for each of the two sub-questions.

Prologue: Old EBP value is saved in stack slot currently pointed by ESP **[TA: +0.5 marks]** and EBP is updated to point to this new location **[TA: +0.5 marks]**.
Epilogue: Stack slot storing the old EBP value is popped and loaded into EBP register **[TA: +0.5 marks]** and ESP is adjusted/moved to the point to the last slot in the stack frame of the caller. **[TA: +0.5 marks]**